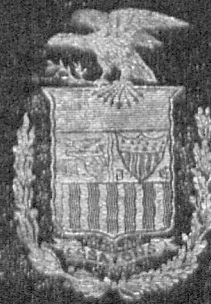


ENGINEER DEPARTMENT, U. S. A.



DETAILED DRAWINGS
OF
DES MOINES RAPIDS, LOCKS AND CANAL
OF THE
MISSISSIPPI RIVER

1872.



DETAILED DRAWINGS
OF
Des Moines Rapids, Locks & Canal.
OF THE
MISSISSIPPI RIVER.

Made under the immediate direction of

Captain A.H. Burnham,

Corps of Engrs U.S.A.

BY

O. S. Willey, C. E.

By order of

Col. J.N. Macomb, Corps of Engrs U. S. A.

Sup't of improvement.

1872.

4206

General Dimensions.

Lower Lock.

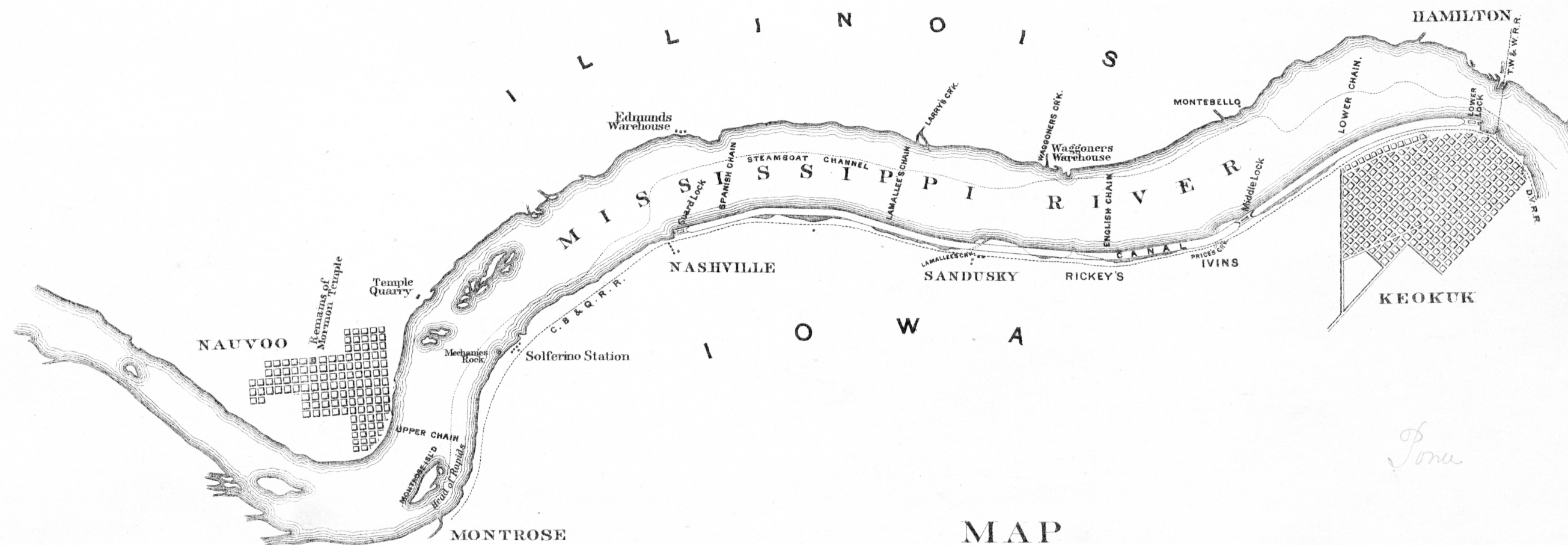
Lock Chamber	350' x 80'
" Wall	Height 23' 5" Base 10' Top 6'
Pier Head	Batir 1" to 1' above Lock bottom 28' 72"
Lower Mitre Sill	Height 1' 8"
Upper " "	" 12' 5"
Through Apex "	15' thick Radius 100'
Angle of " "	20° 44' 30"
Breast Wall	10' wide Height 12' 5"
Radius of Recess	138'
Recess Culverts	3' x 5' 10"
Outside " "	To rise of Arch 7' Rad. Arch 5' thickness Arch 2'
" " "	7' x 7' 6" at upper end 3' 3" x 4' at lower end, length 180'
Culverts through Lock Wall	3' x 3' 8"
Lower Gates	Height 21' 6" length 46'
Upper " "	12' 8" " 46'

Middle Lock

Lock Wall	Height 19' 8"
Lower Gates	length 46' " 17' 9"
Upper " "	" 46 " 9' 8"

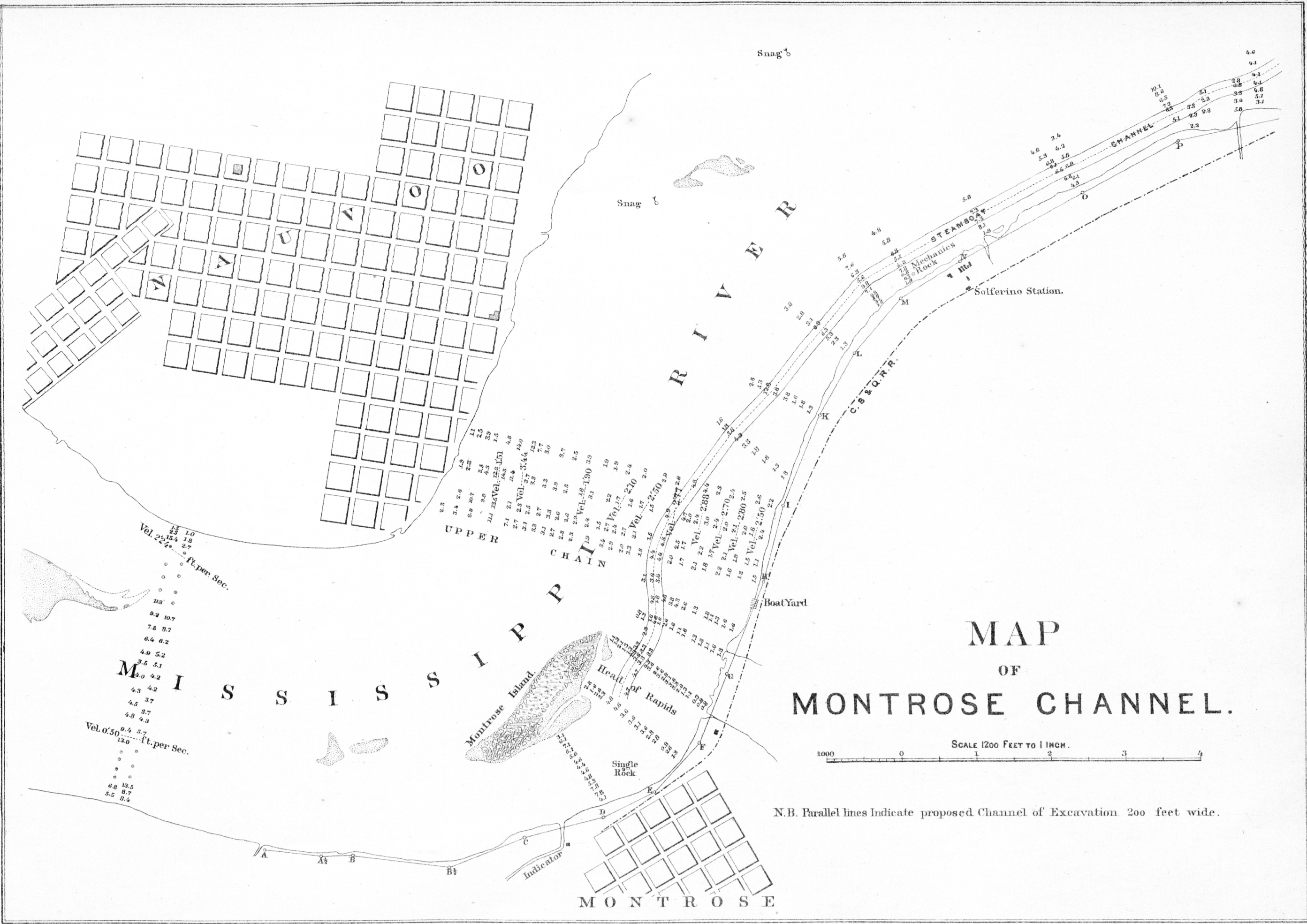
Guard Lock

Lock Wall	Height 20' 8"
Lower Gates	length 46' " 16' 0"
Upper " "	" 46 " 19' 0"



MAP
OF THE
DES MOINES RAPIDS
OF THE
MISSISSIPPI RIVER.

SCALE 5400 FEET TO 1 INCH

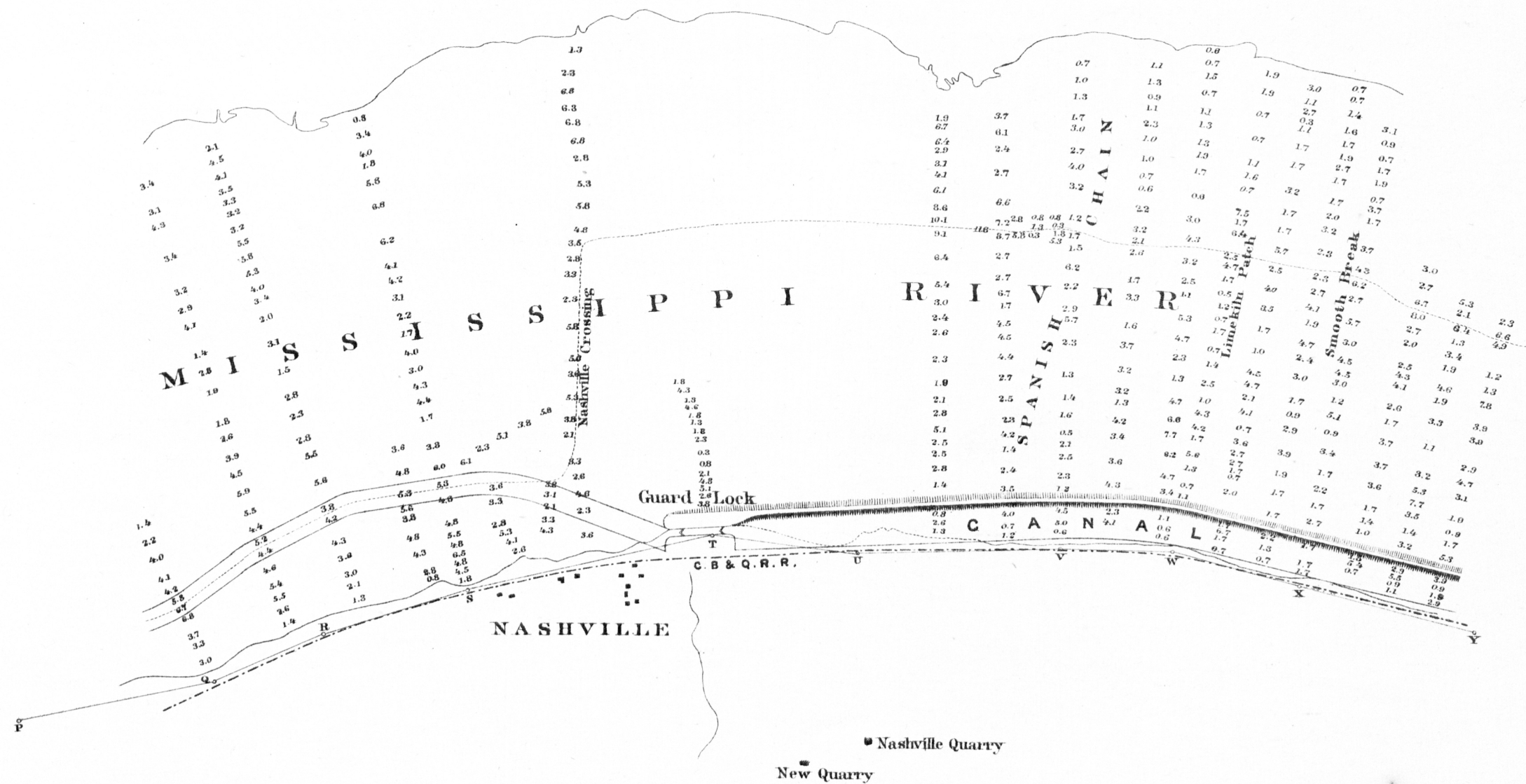


Vel. 2.2 ft. per Sec.
1.5 1.0
2.3 1.8
1.5 1.0
9.9 10.7
7.5 9.7
6.4 6.2
4.9 5.2
3.5 5.1
4.0 4.2
4.3 4.2
4.5 3.7
4.8 3.7
4.8 4.3
Vel. 0.50 ft. per Sec.
0.4 5.7
13.0
6.8 13.5
5.5 8.7
5.4

MAP OF MONTROSE CHANNEL.

SCALE 1200 FEET TO 1 INCH.
1000 0 1 2 3 4

N.B. Parallel lines Indicate proposed Channel of Excavation 200 feet wide.



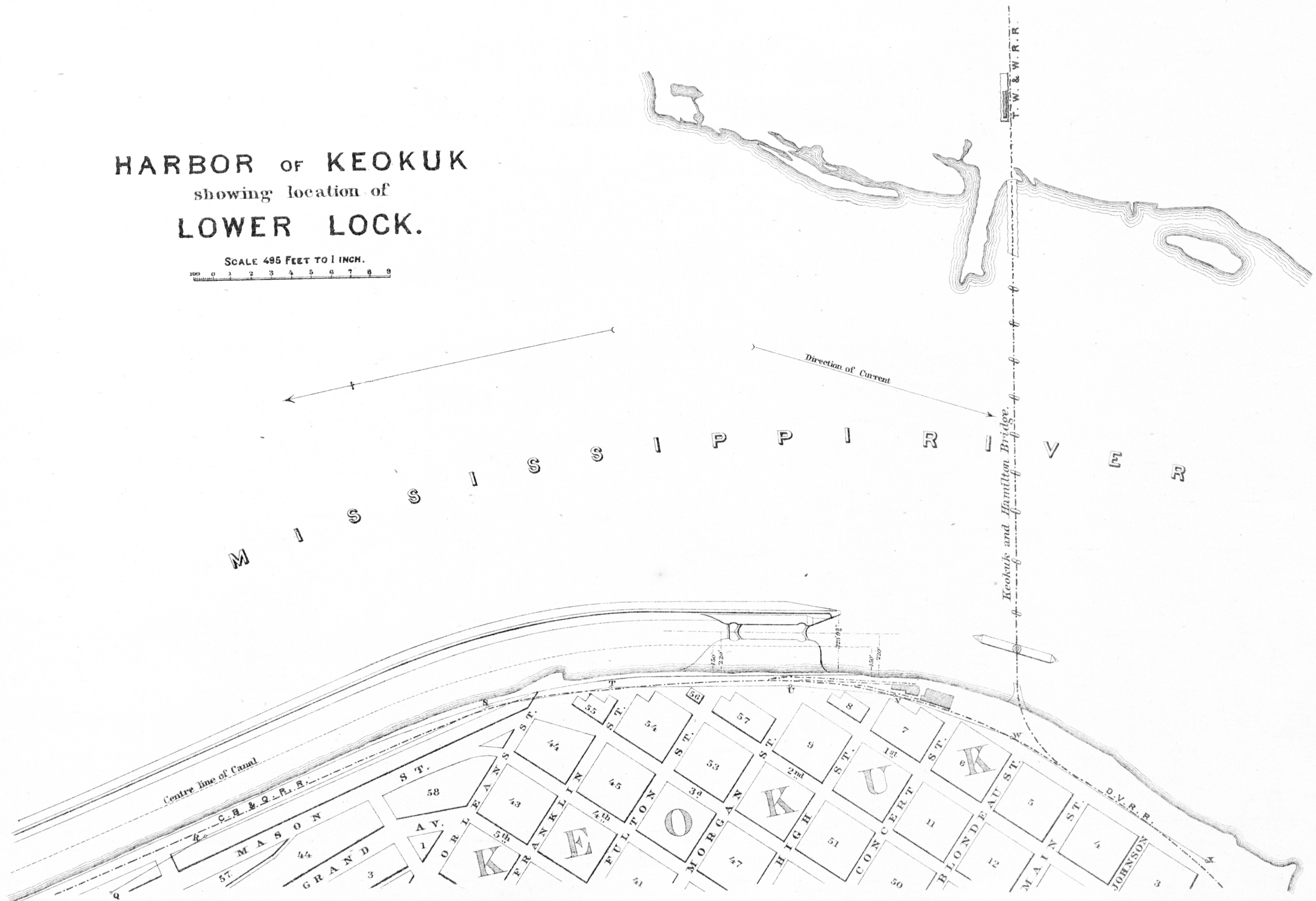

LOCATION OF GUARD LOCK.

SCALE 1200 FEET TO 1 INCH.

HARBOR OF KEOKUK

showing location of
LOWER LOCK.

SCALE 495 FEET TO 1 INCH.

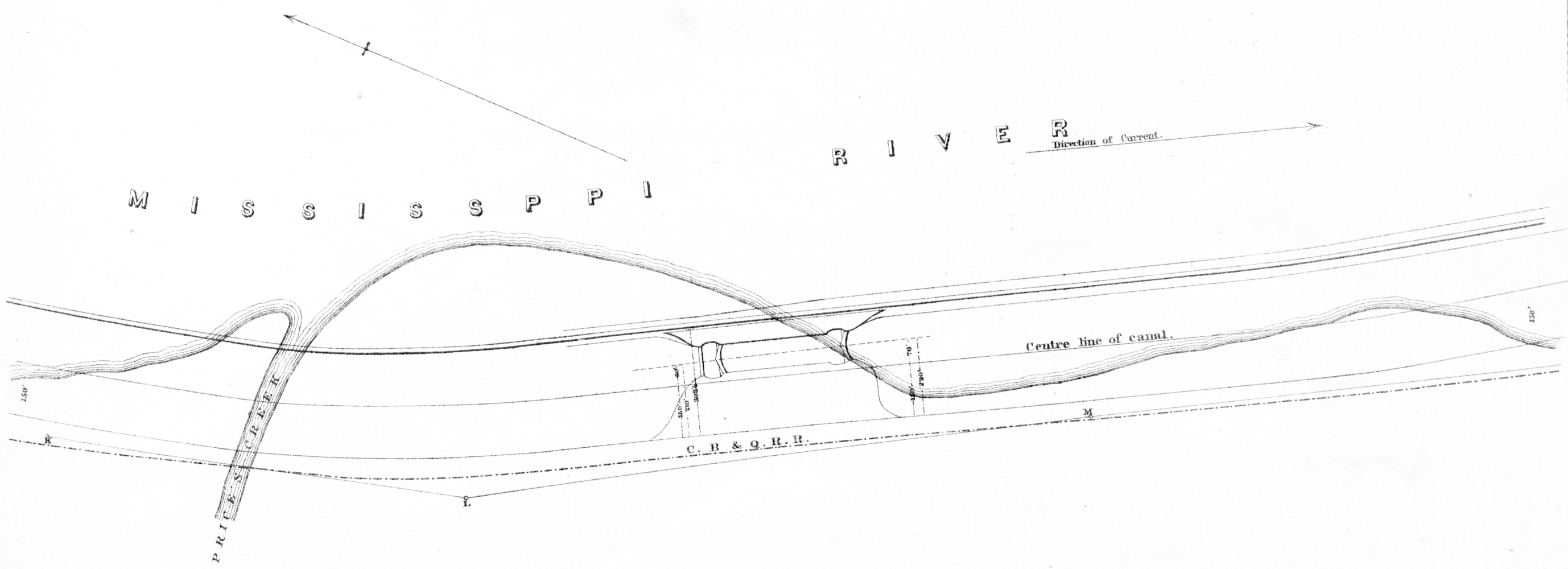


MAP

showing location of

MIDDLE LOCK.

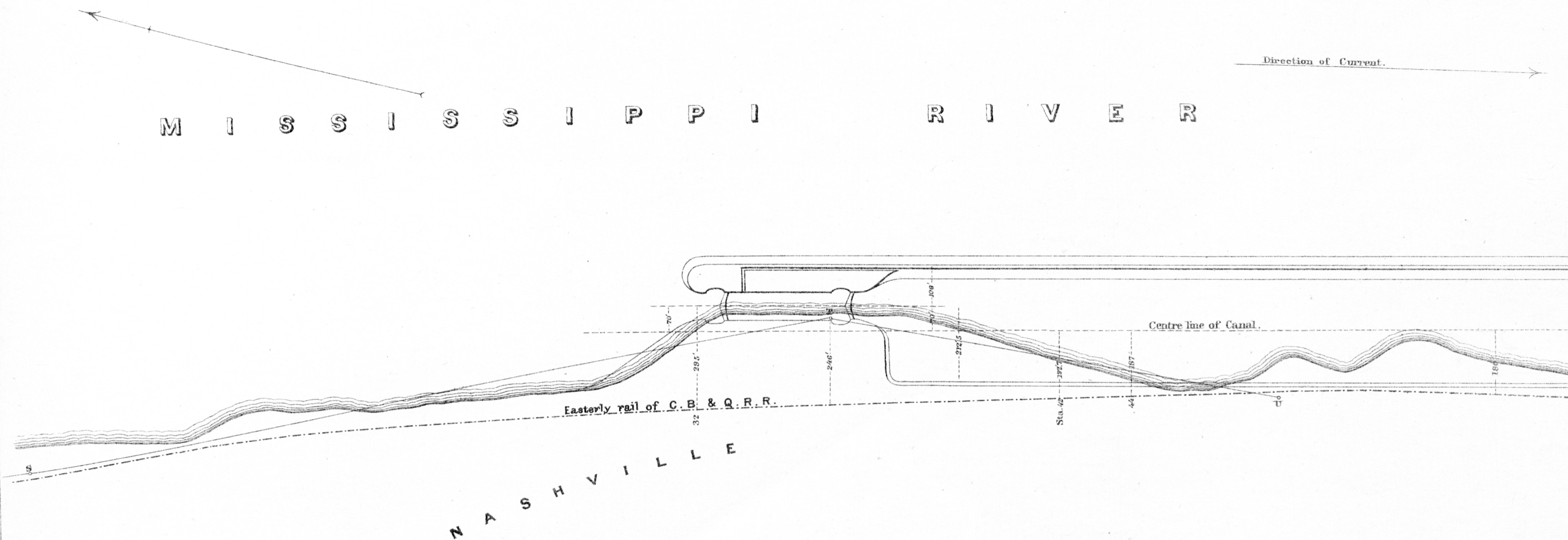
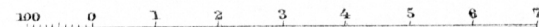
SCALE 300 FEET TO 1 INCH.

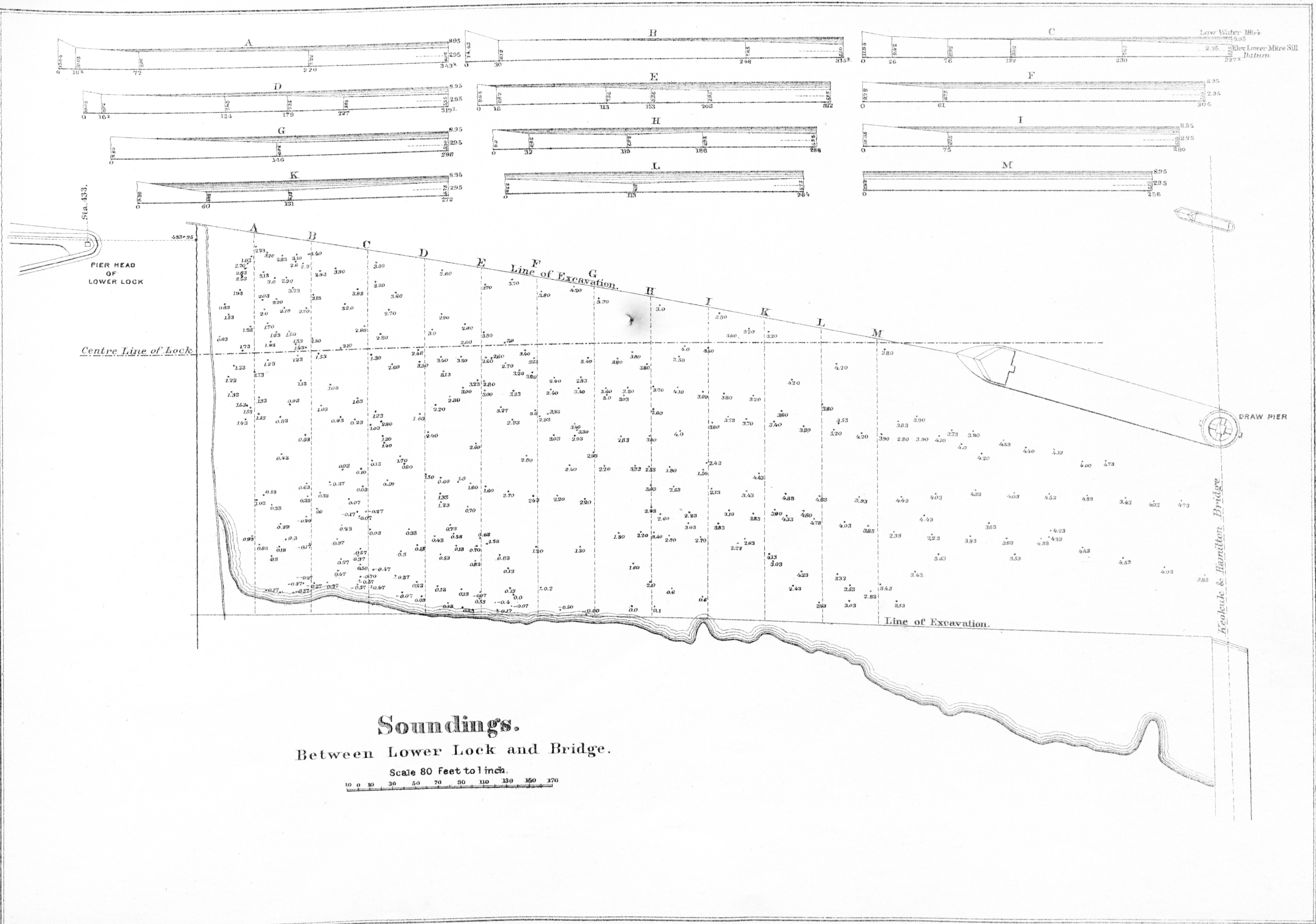


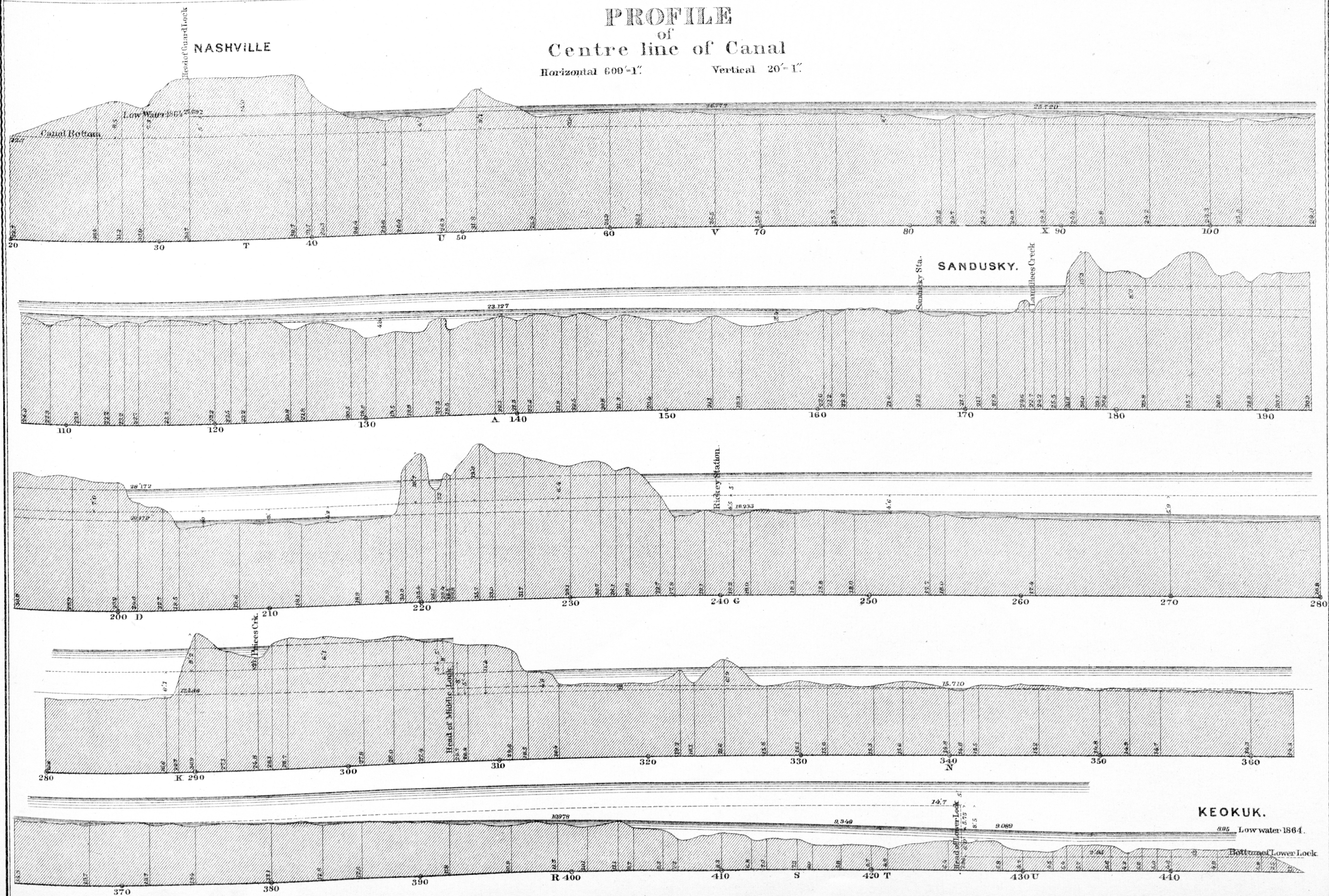
MAP

showing location of
GUARD LOCK.

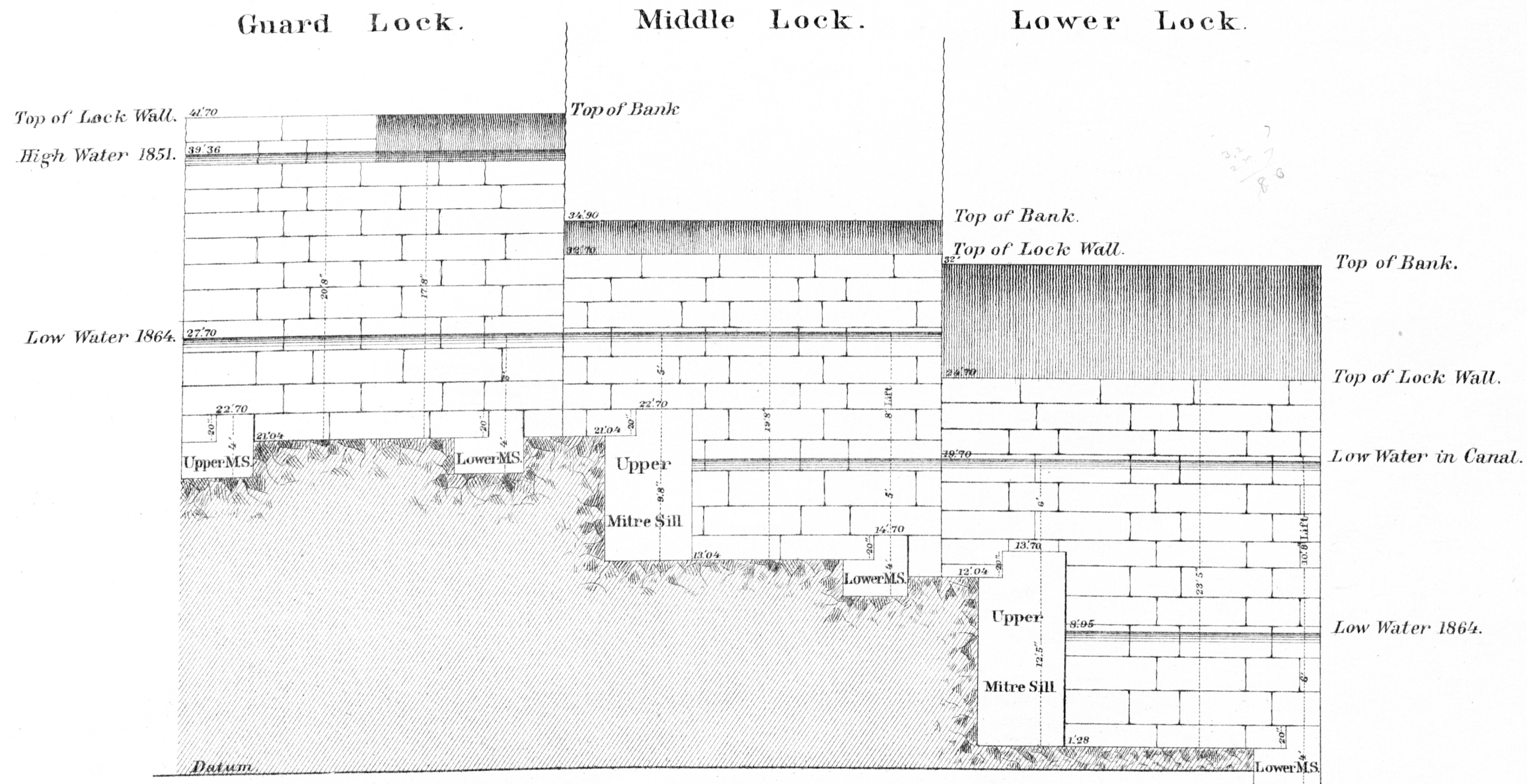
SCALE 300 FEET TO 1 INCH.



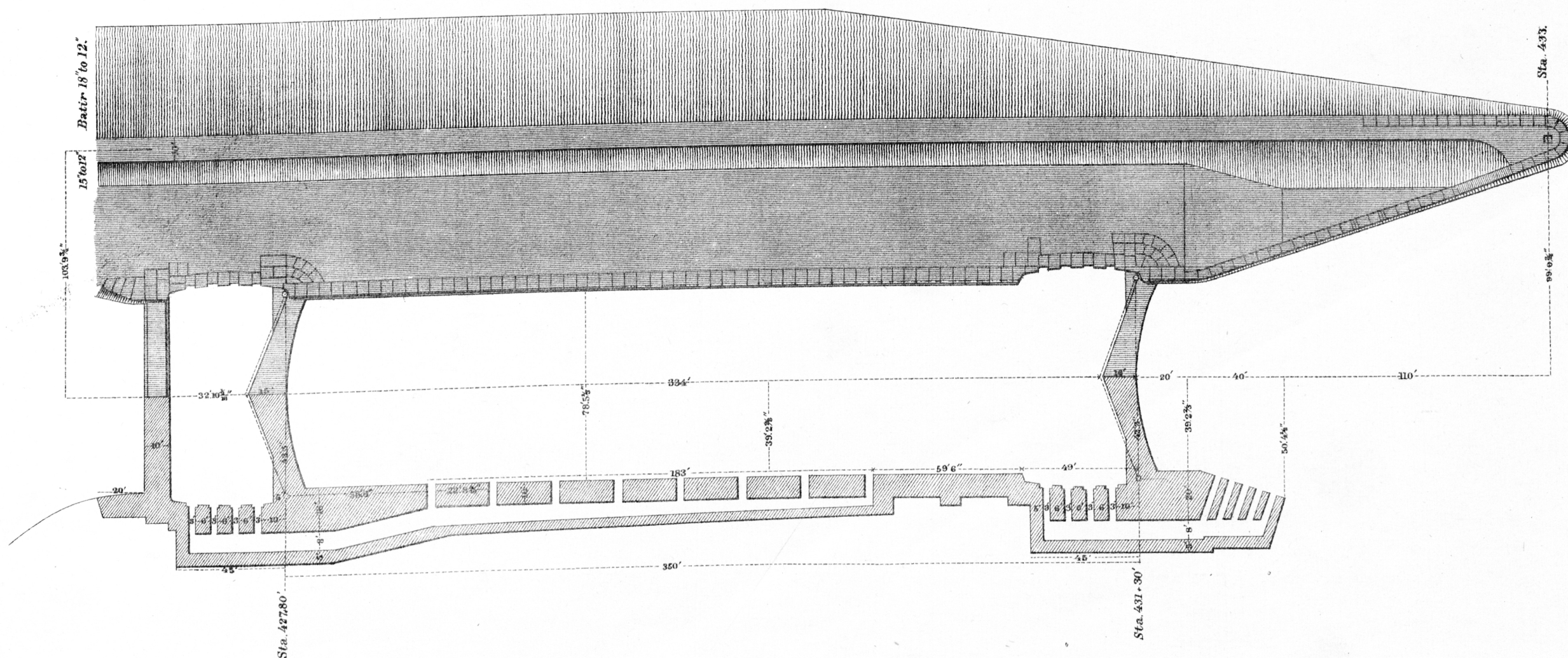




Reference.

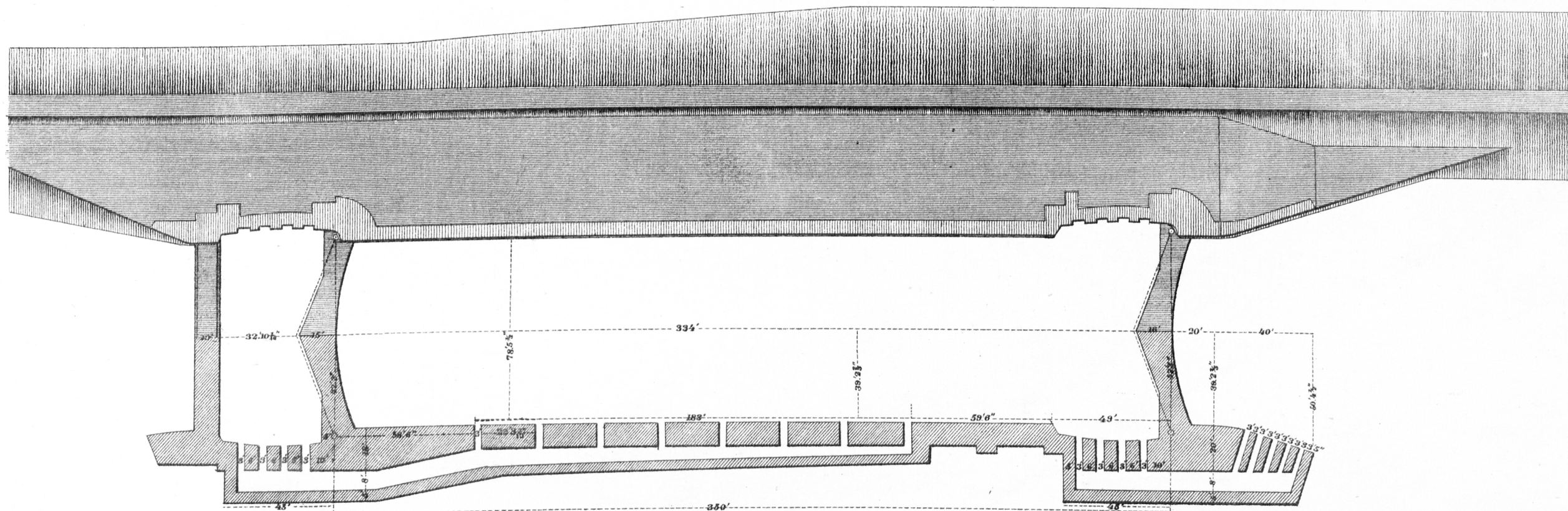


Scale 50 ft to 1 inch.

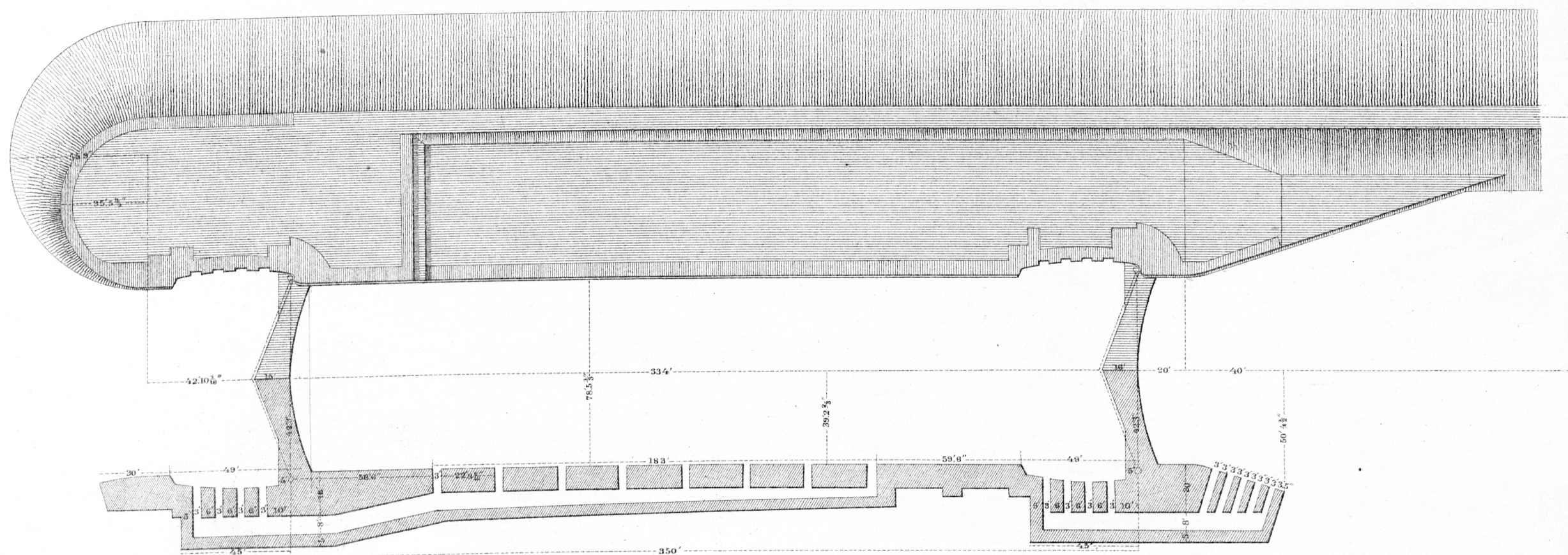


GENERAL PLAN OF MIDDLE LOCK.

Scale 50 ft to lin.

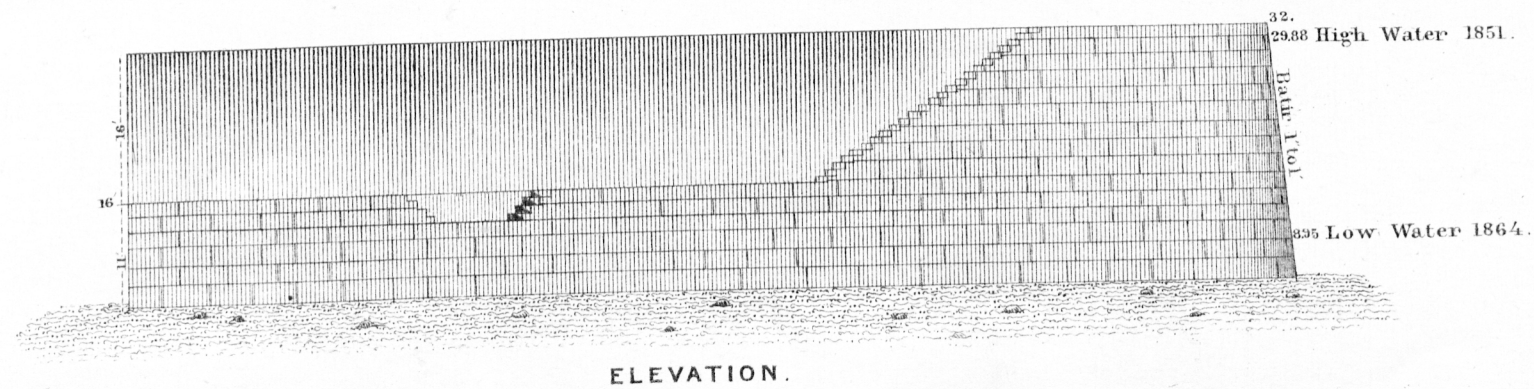
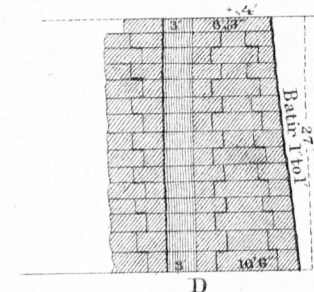
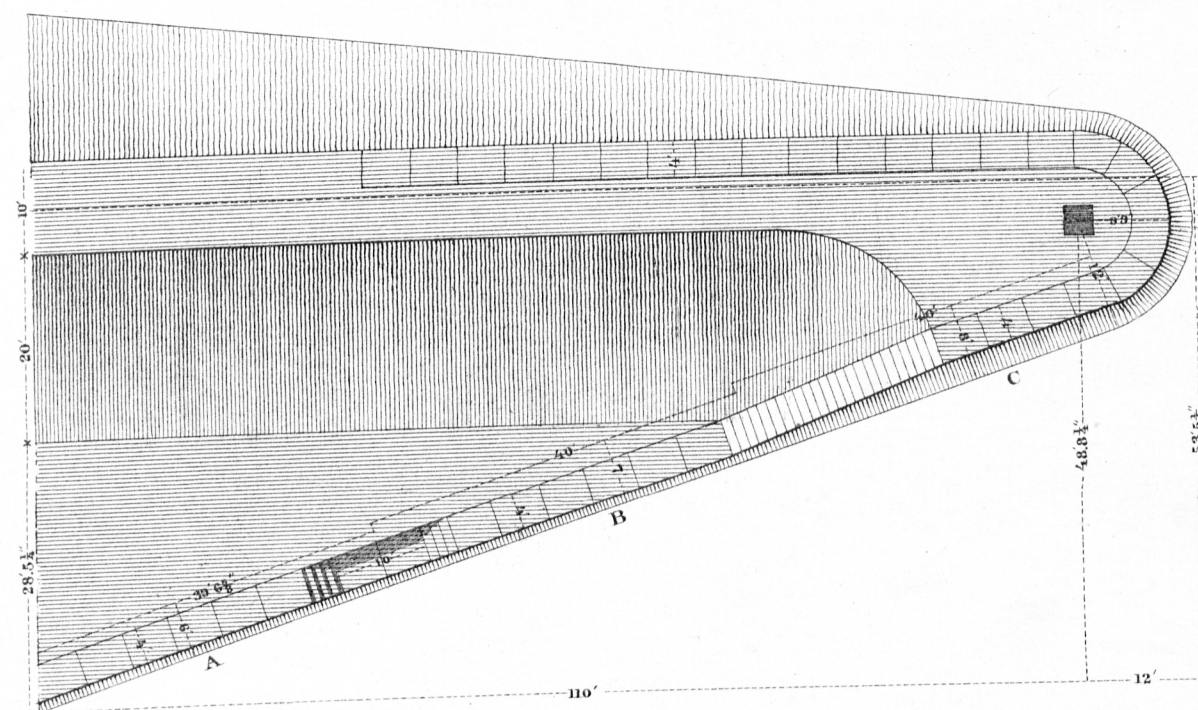
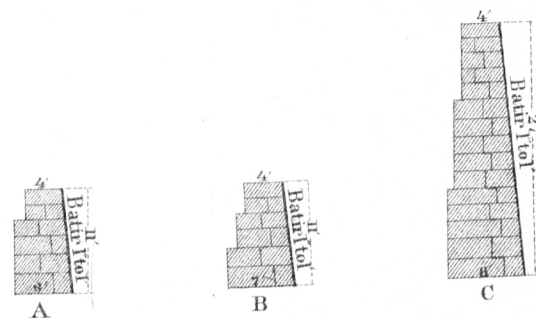


Scale 50 ft to 1 in.



PLAN of PIER.

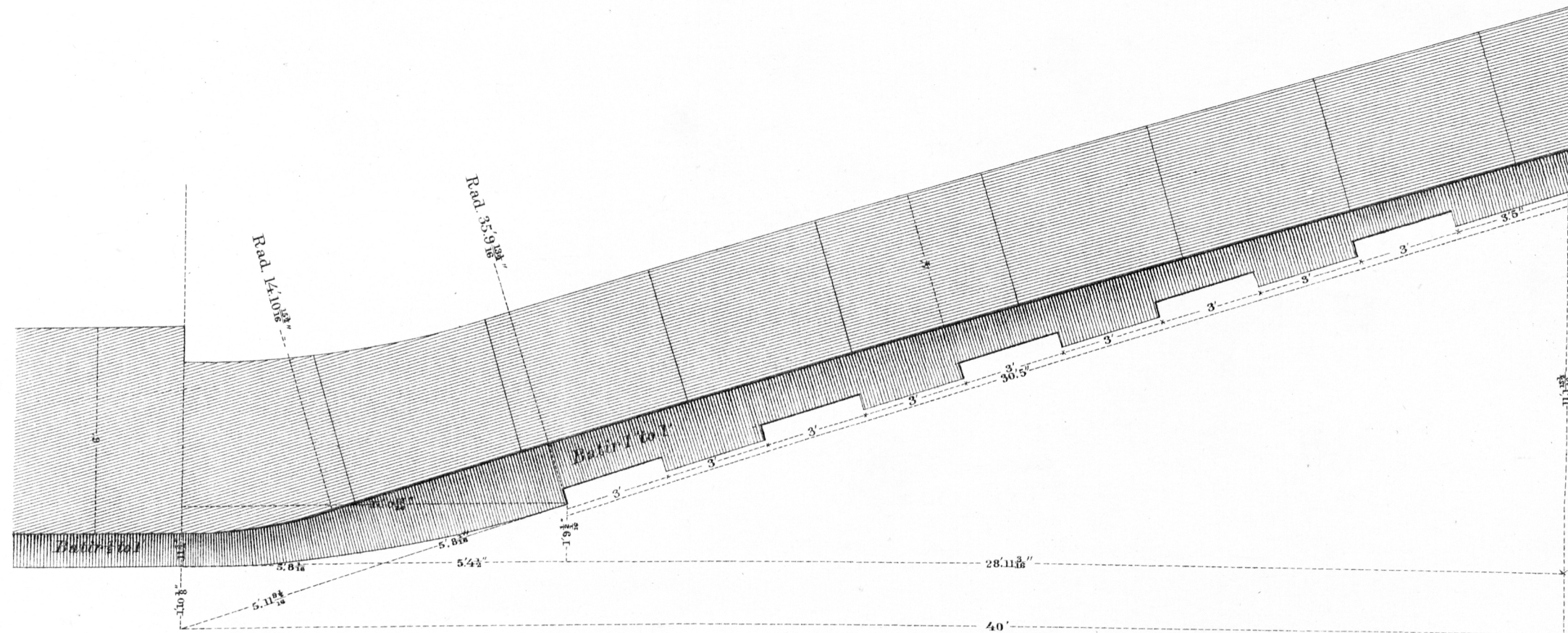
Scale, 20 ft. to in.



ELEVATION.

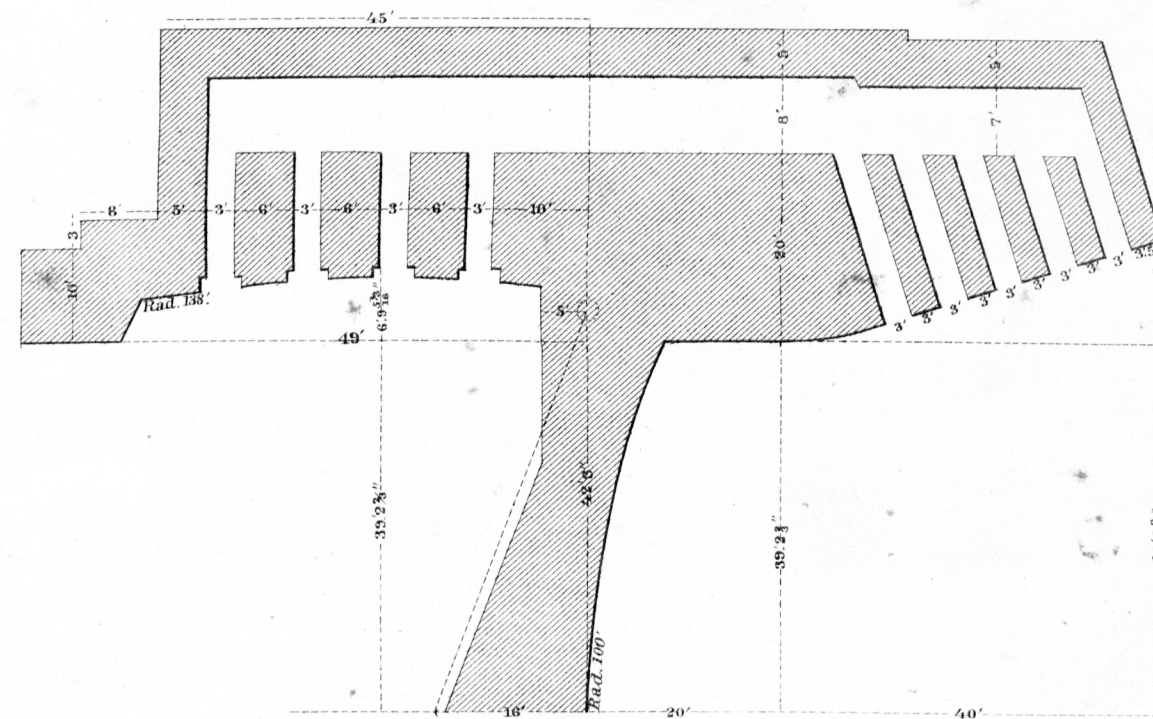
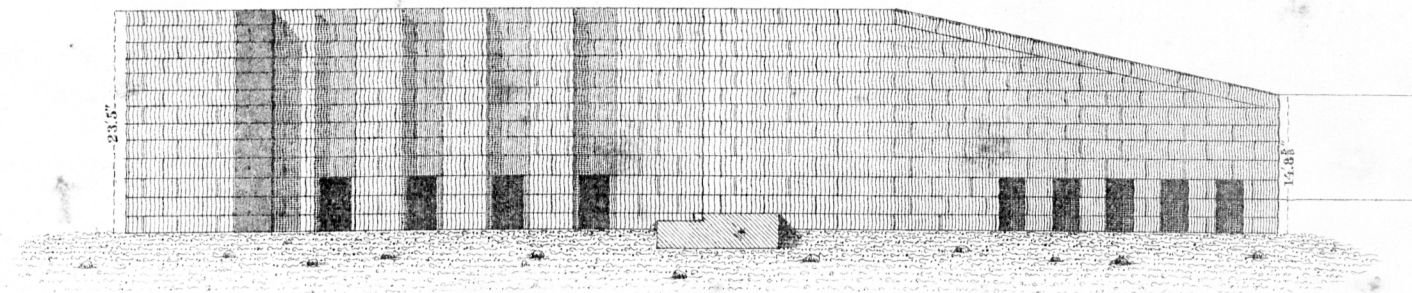
Lower Wing Wall.

Scale 4 ft. to 1 in.



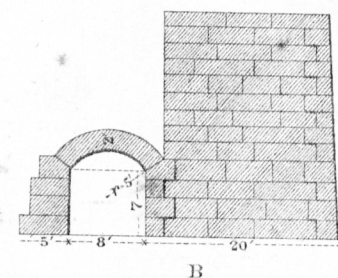
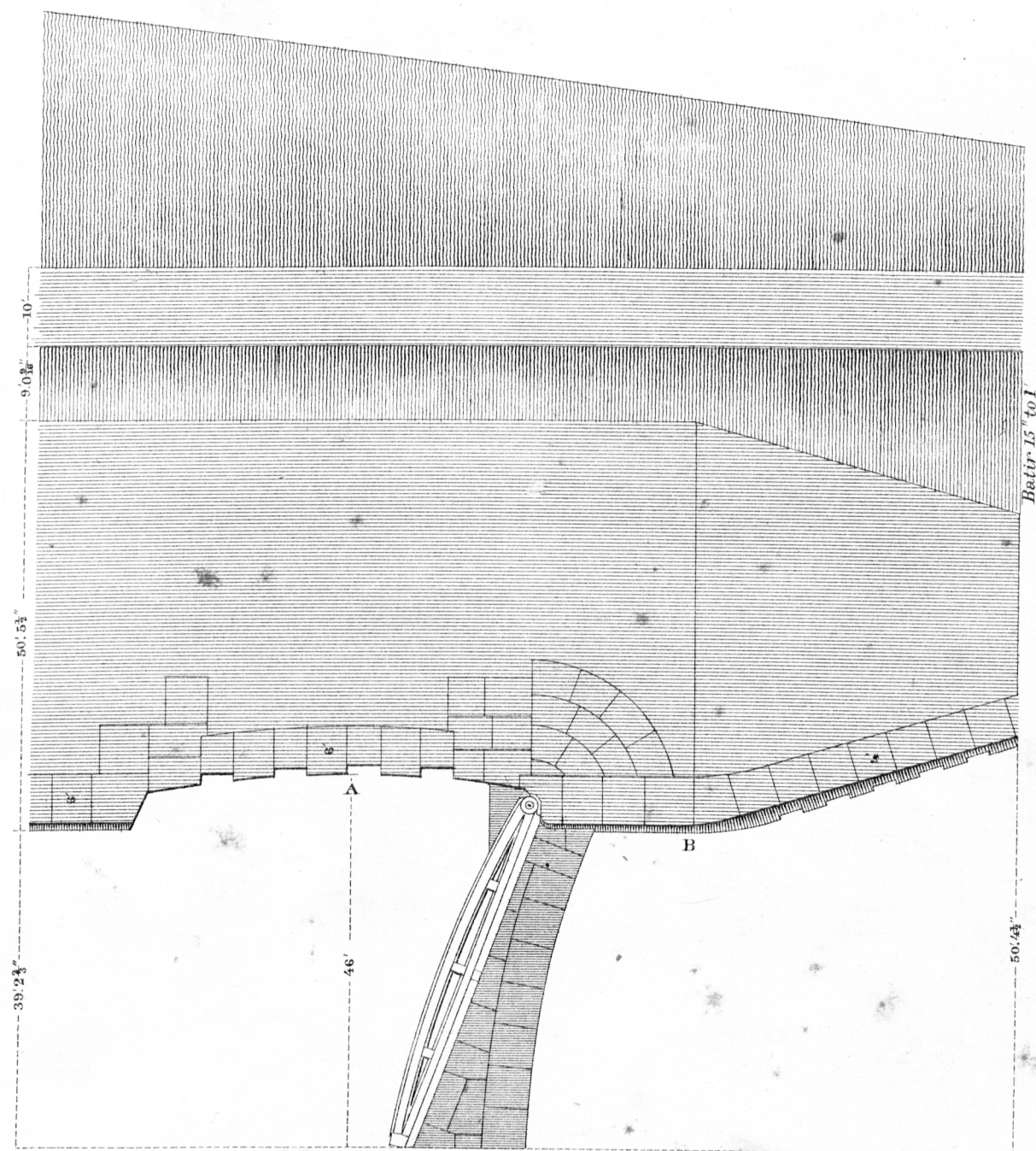
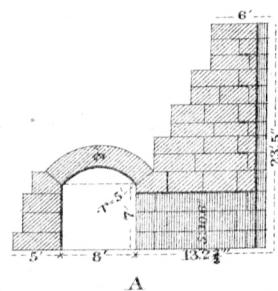
LOWER RECESS AND DISCHARGE CULVERTS.

Scale 20 ft. to 1 in.



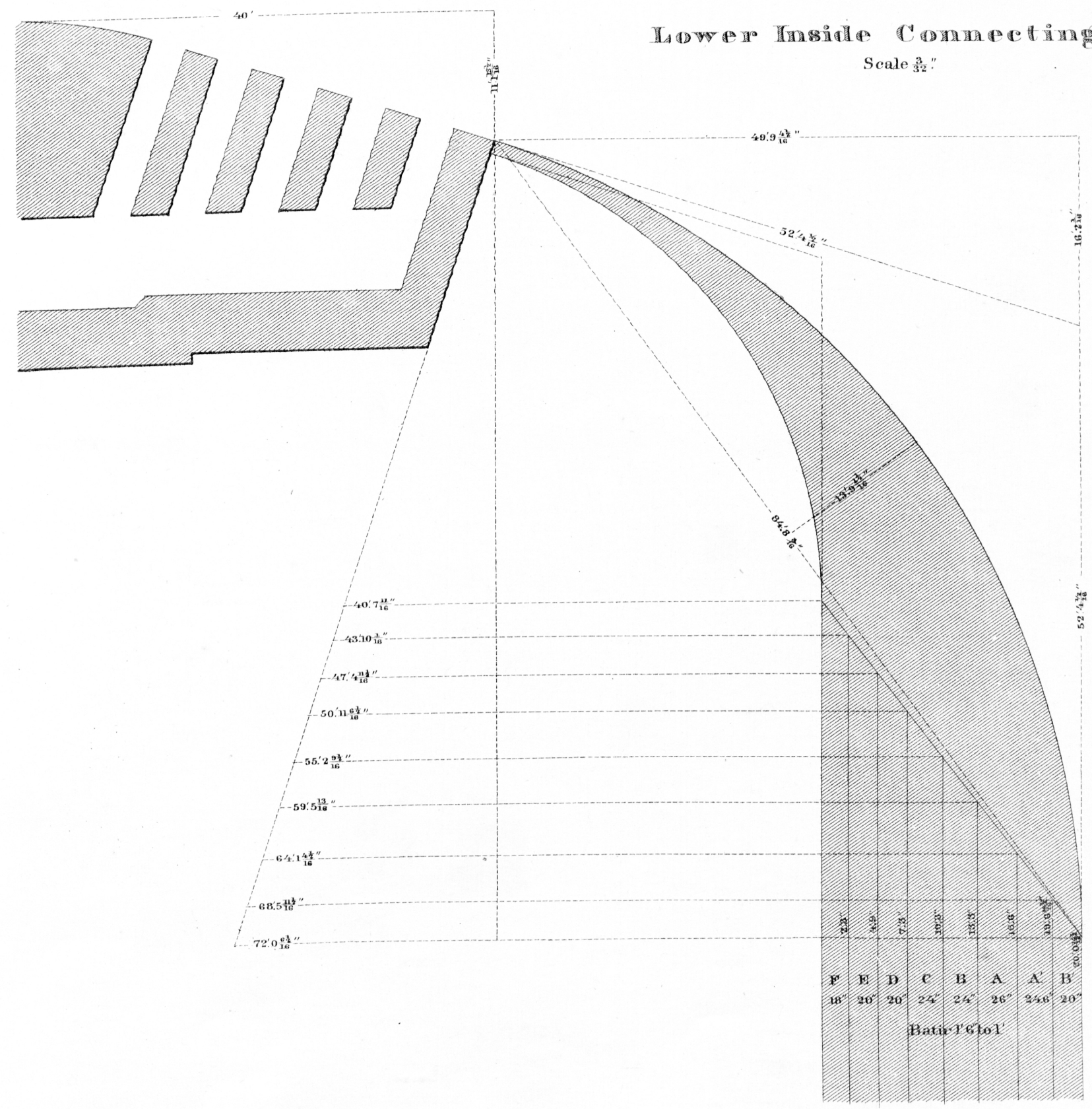
LOWER RECESS & DISCHARGE CULVERTS.

Scale 20 ft. to 1 in.

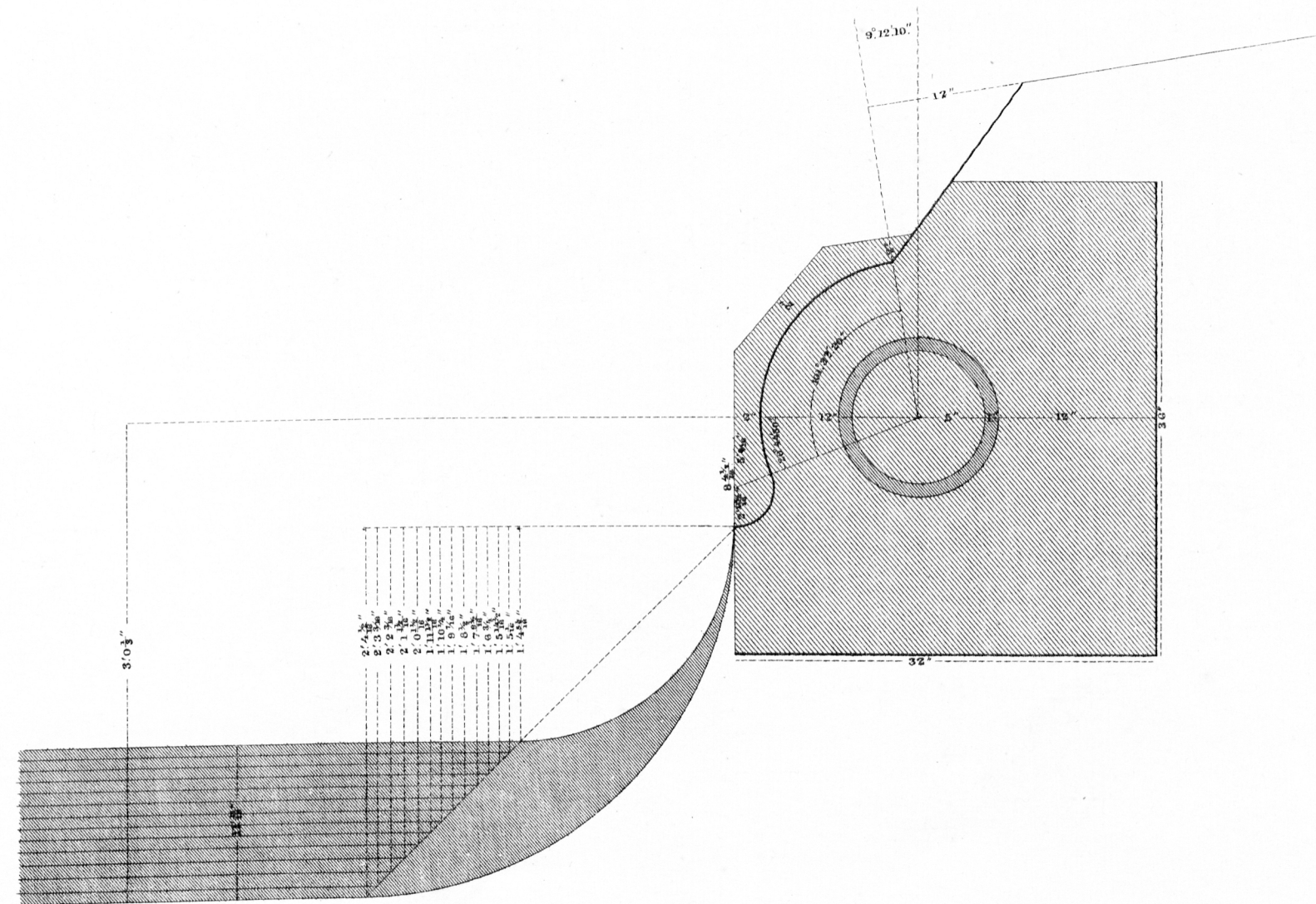


Lower Inside Connecting Wall.

Scale $\frac{3}{32}$ "



Winding Face
AT
HEEL POST.
Scale 1 to 1"



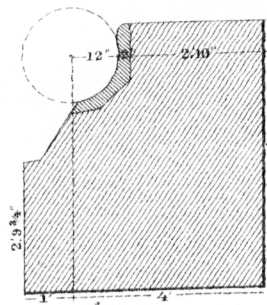
Hollow Quoin Stones.

Scale 4 ft. to lin.

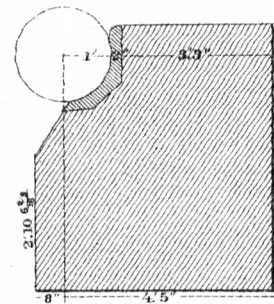
UPPER MITRE SILL.

LOWER MITRE SILL.

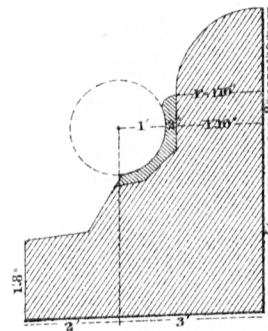
E = 20"



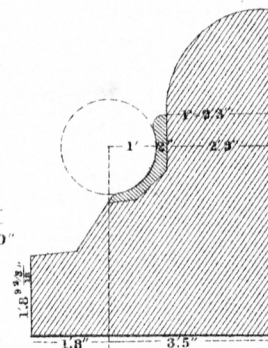
B' = 20"



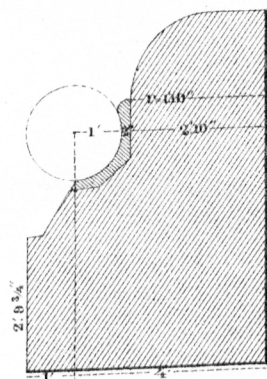
F 22"
H 20"
K 20"



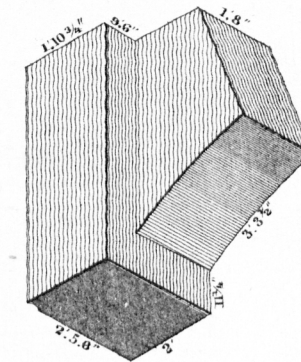
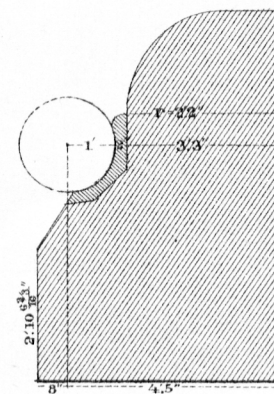
A B D F H K
24.6" 24" 20" 22" 20" 20"



G 22"
I 20"
L 18"

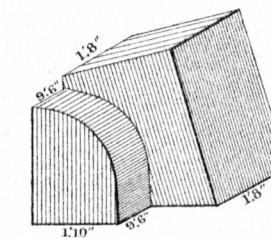


A C E G I L
26" 24" 20" 22" 20" 18"



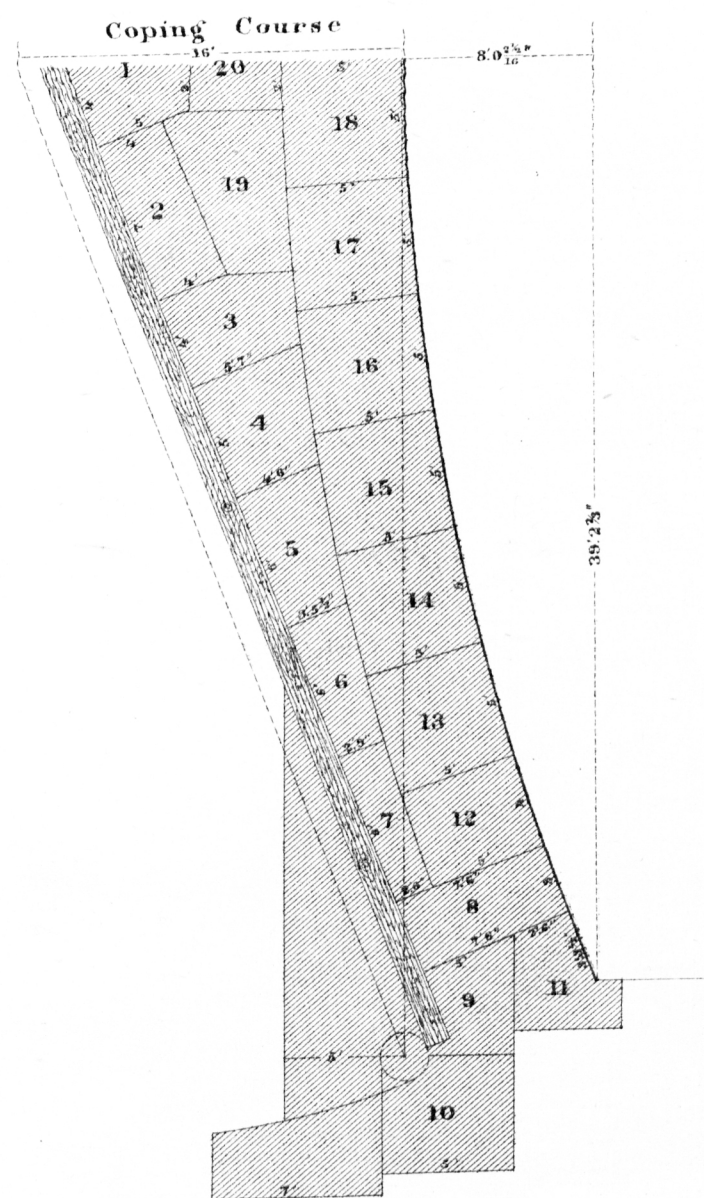
Stone No. 11.

Stone No. 9.

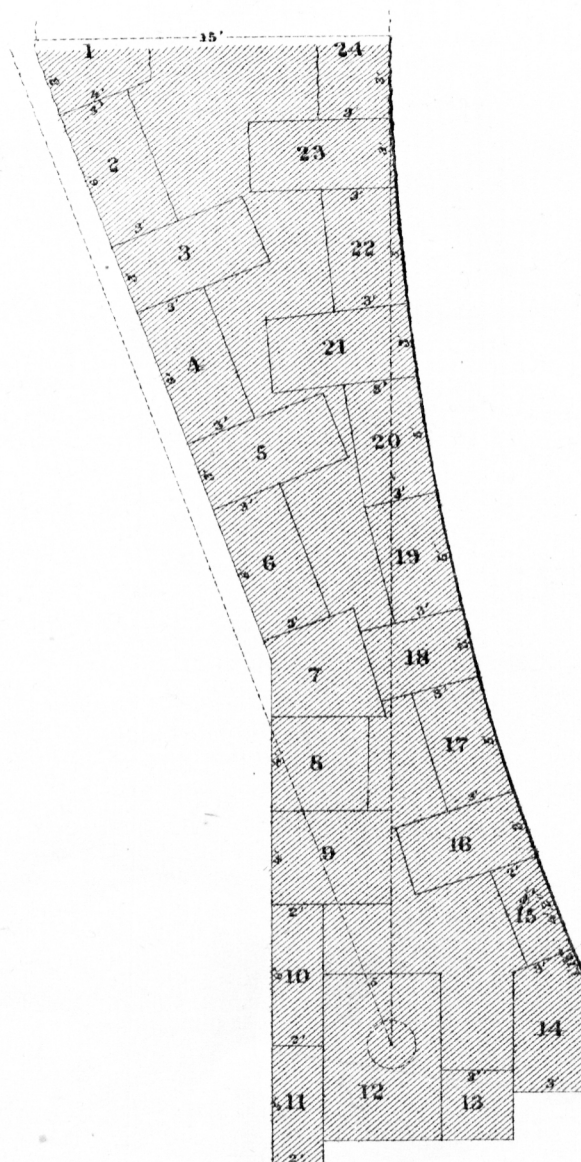


Mitre Sills.

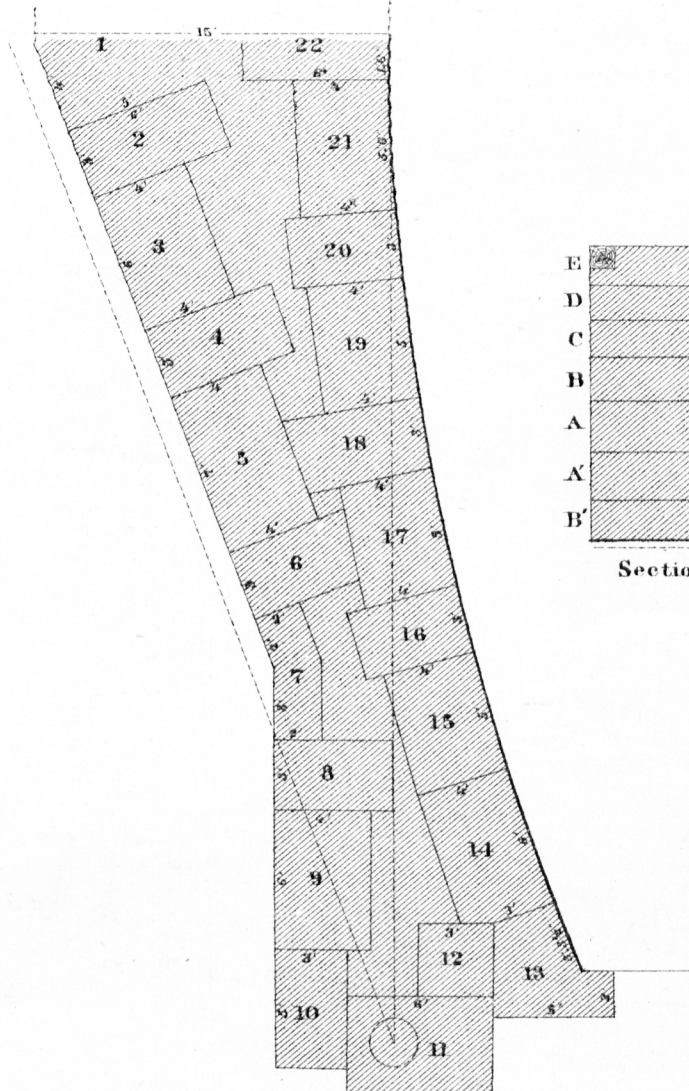
Scale 8 ft. to in.



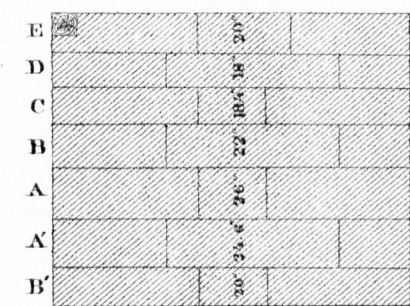
B = 20" Coping.
E = 20" "



A' = 24.6"
B = 22"
D = 18"
of Upper M.S.
&
C' = 28"
of Lower M.S.



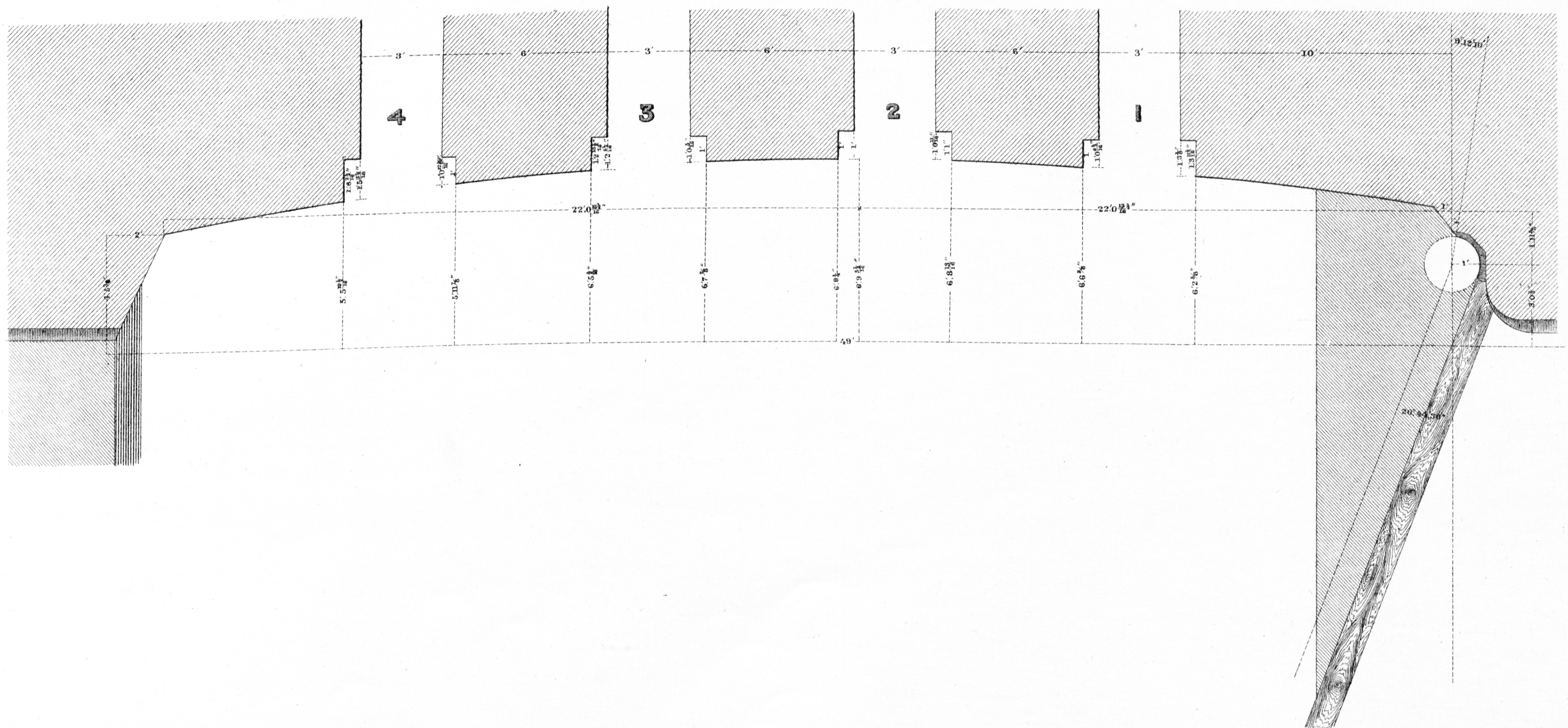
B' = 20"
A = 26"
C = 18.4"
of Upper M. S.



Section through Apex.

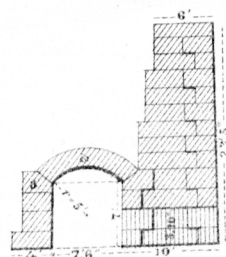
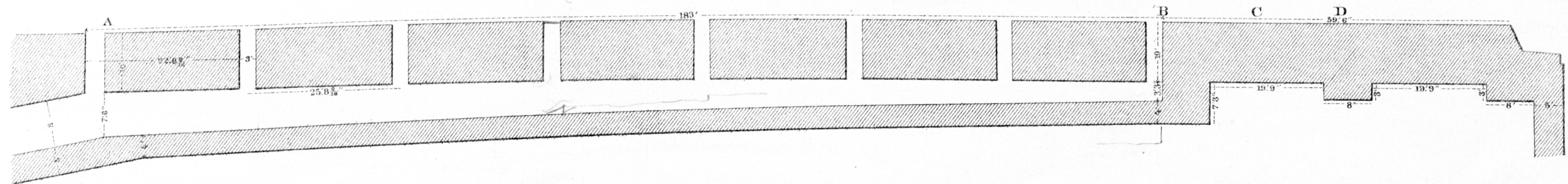
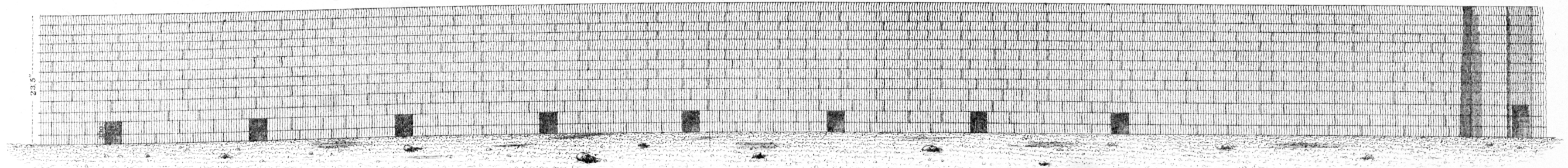
21

11

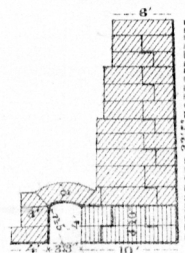


RECEIVING CULVERTS.

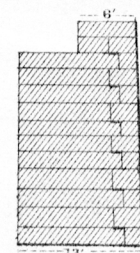
Scale 20 ft. to in.



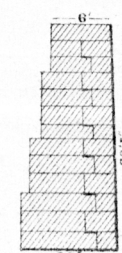
A



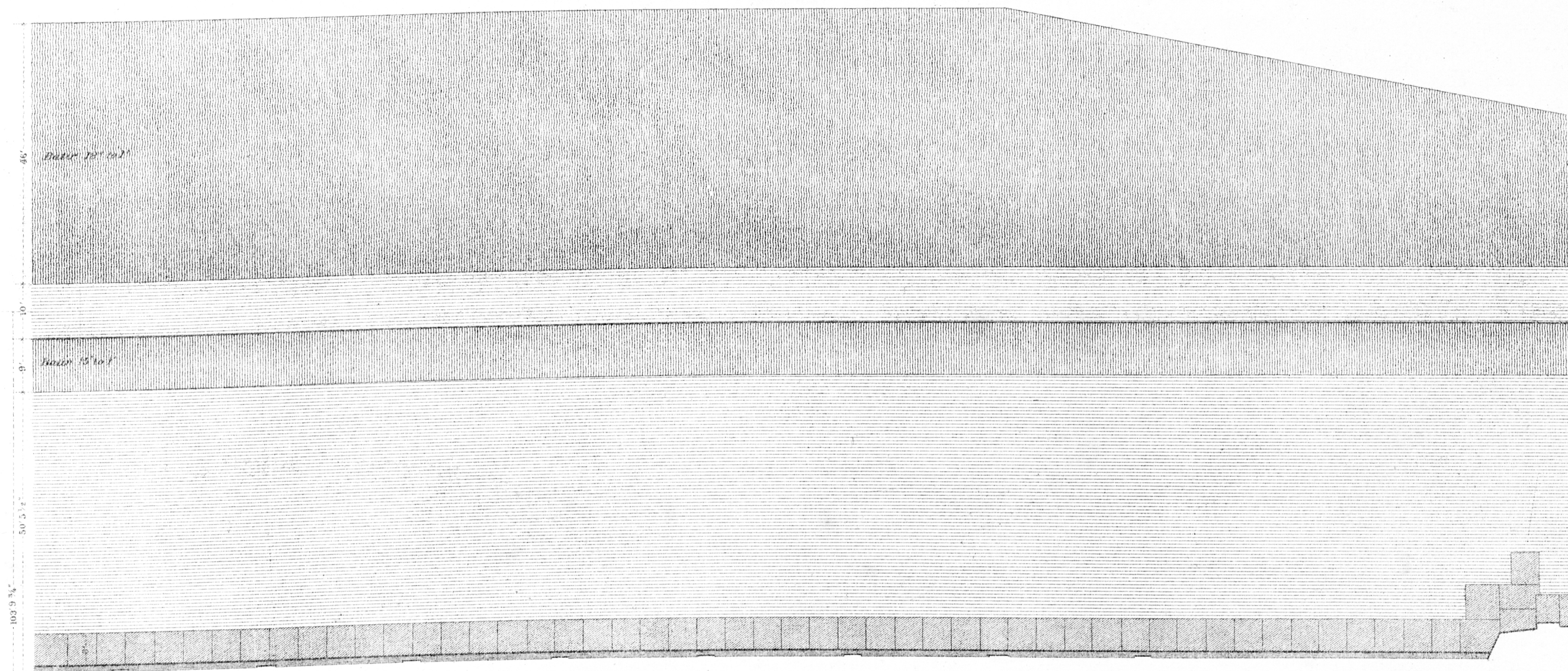
B



C



D

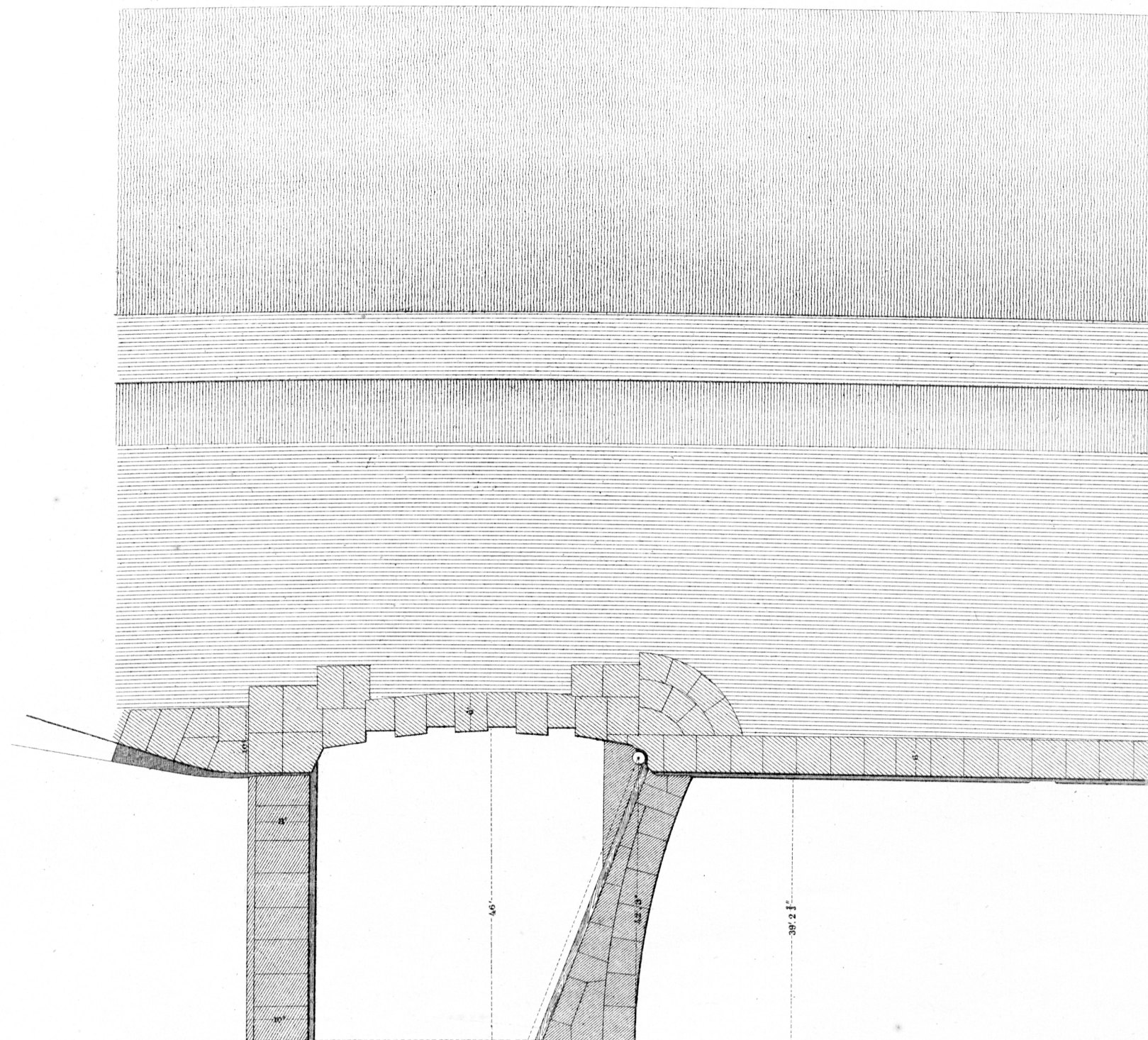


PLAN OVER
RECEIVING CULVERTS.

Centre of Lock

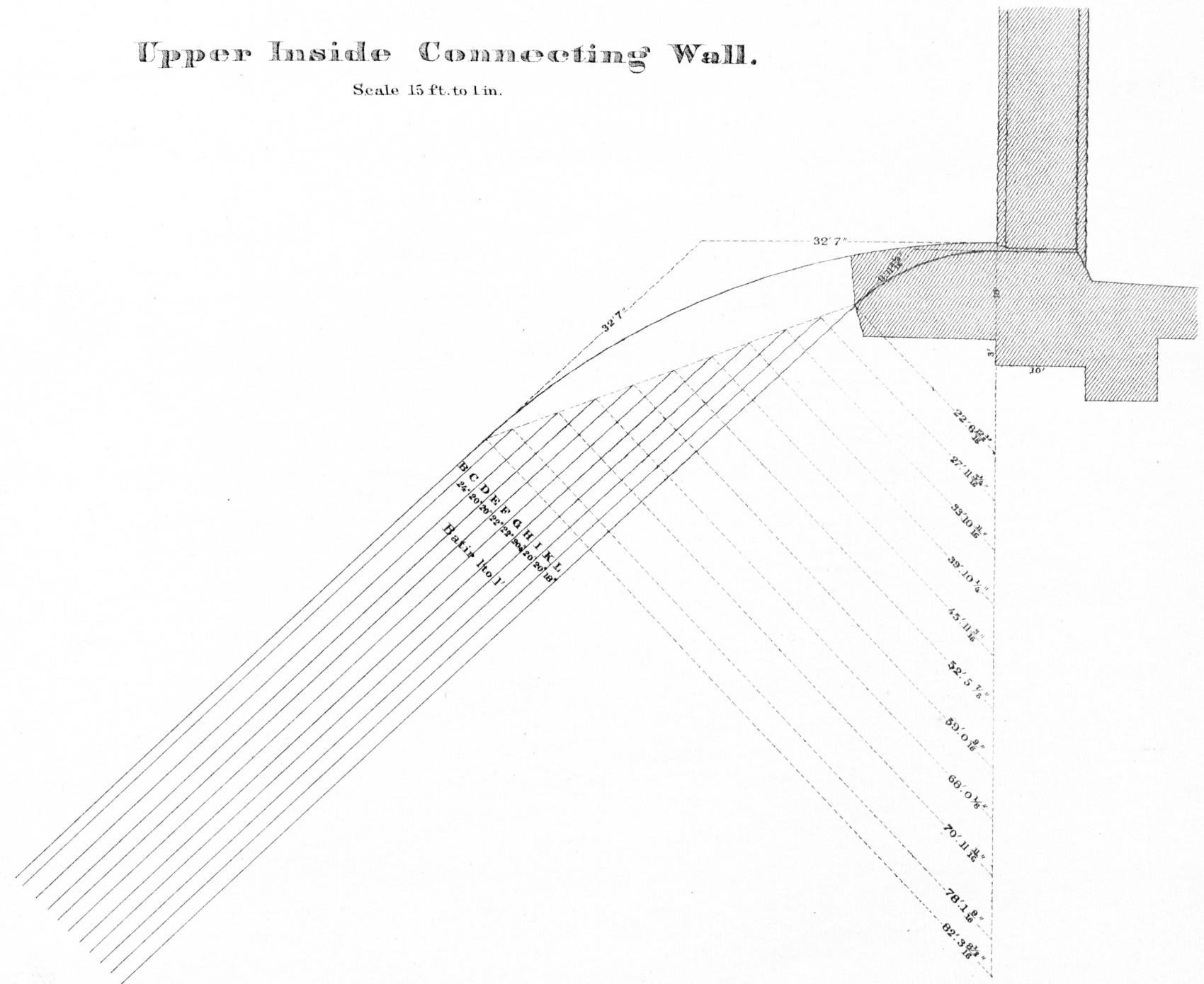
UPPER RECESS.

Scale 20 ft. to 1 in.



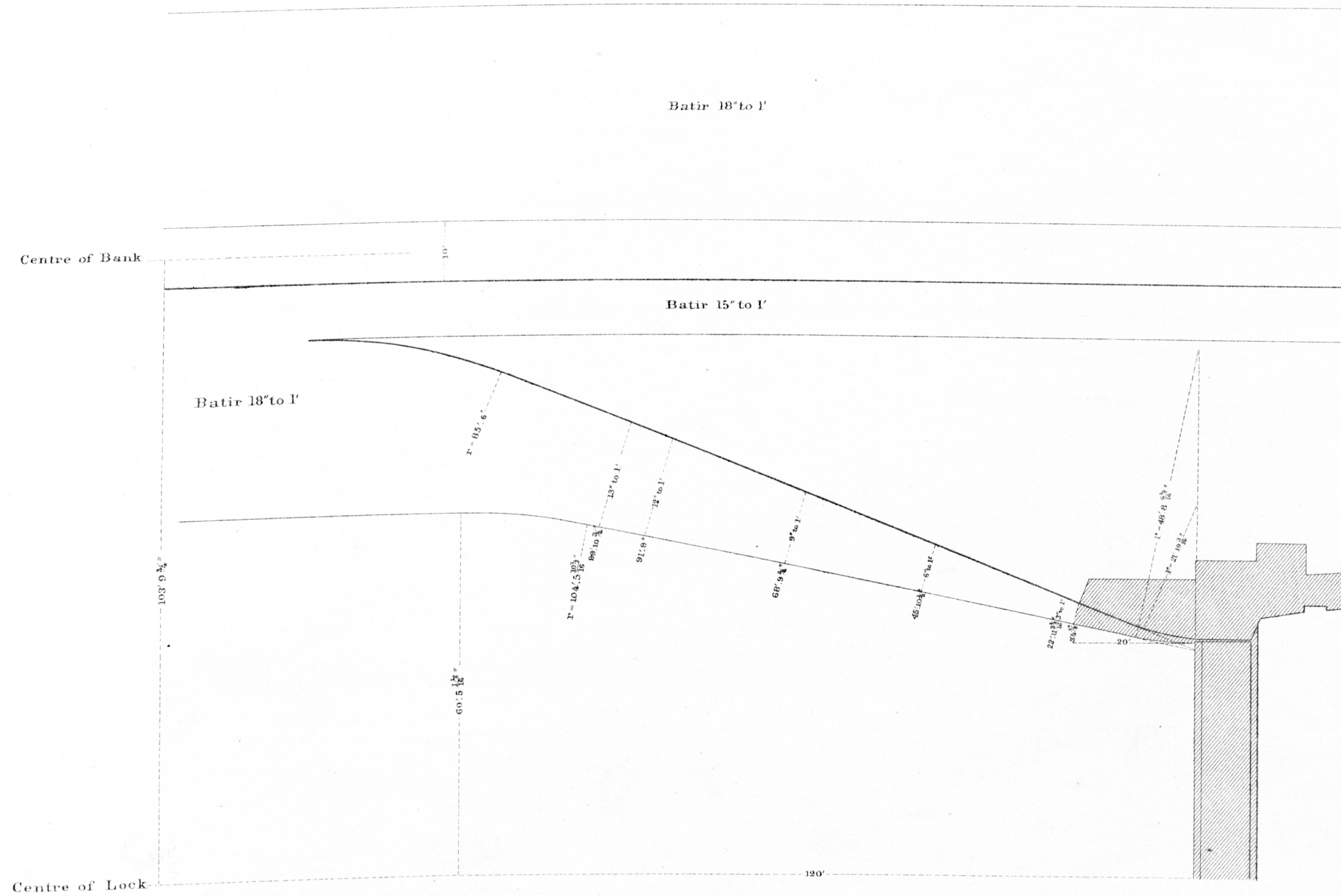
Upper Inside Connecting Wall.

Scale 15 ft. to 1 in.



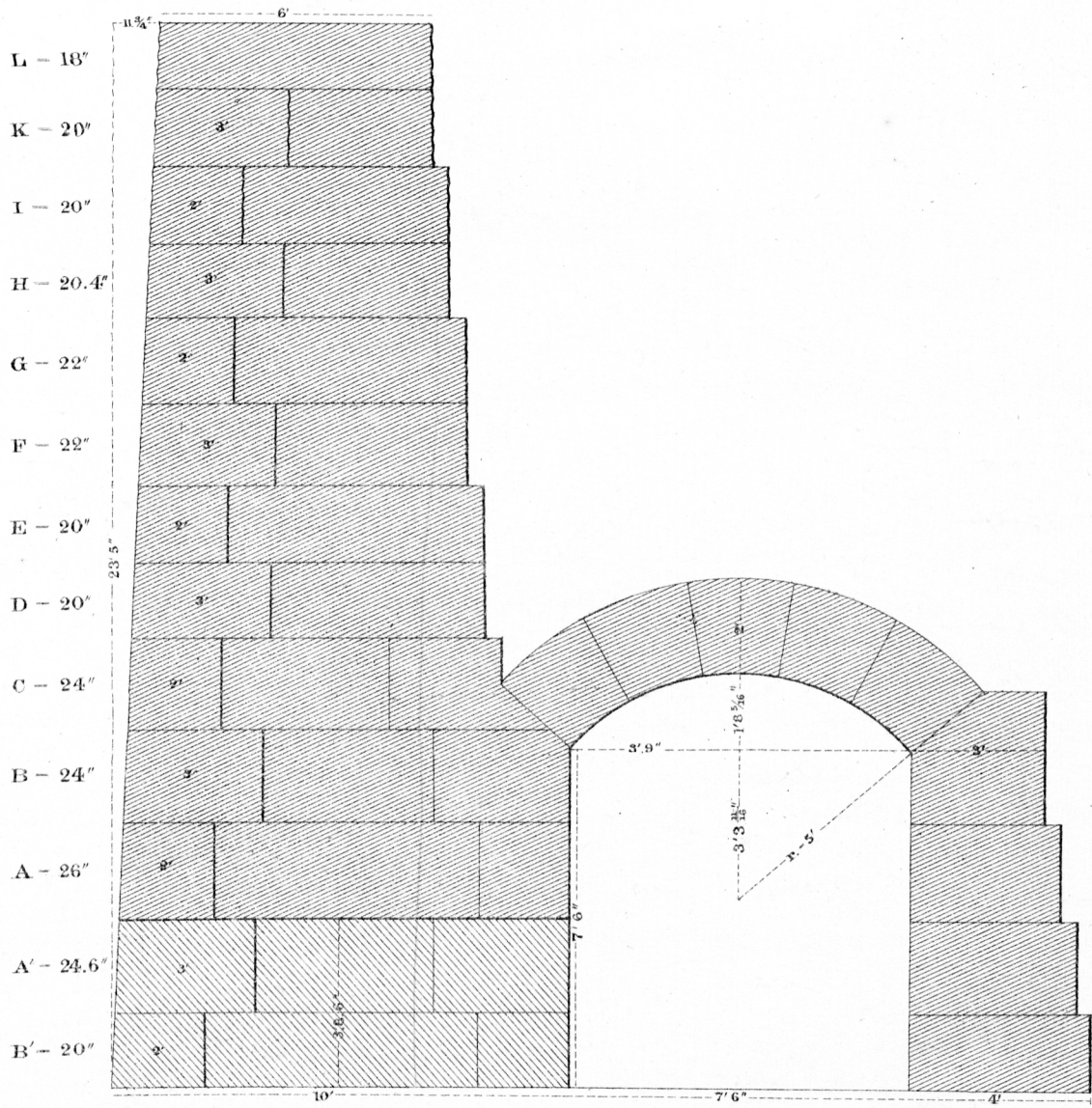
Upper Outside Connecting Wall

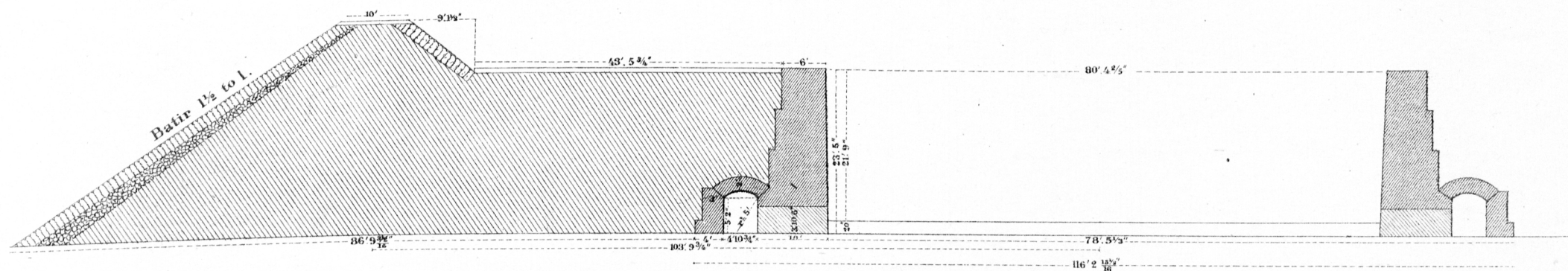
Scale 20 ft. to 1 in.



General Section through Lock Wall.

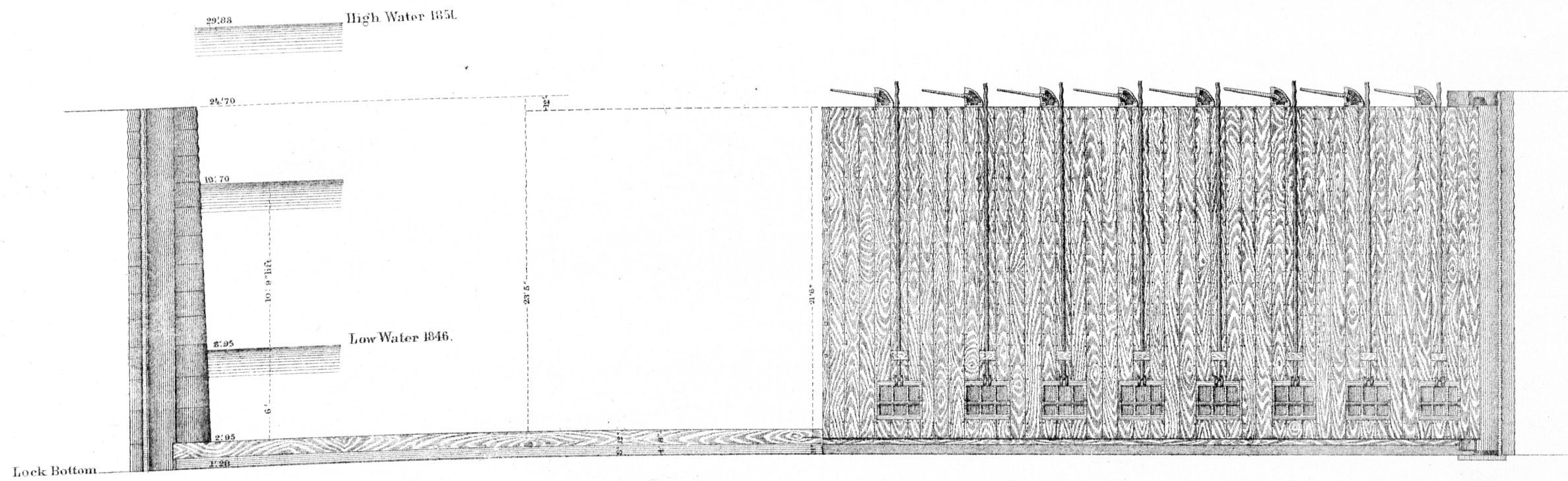
Scale 4 ft. to 1 in.





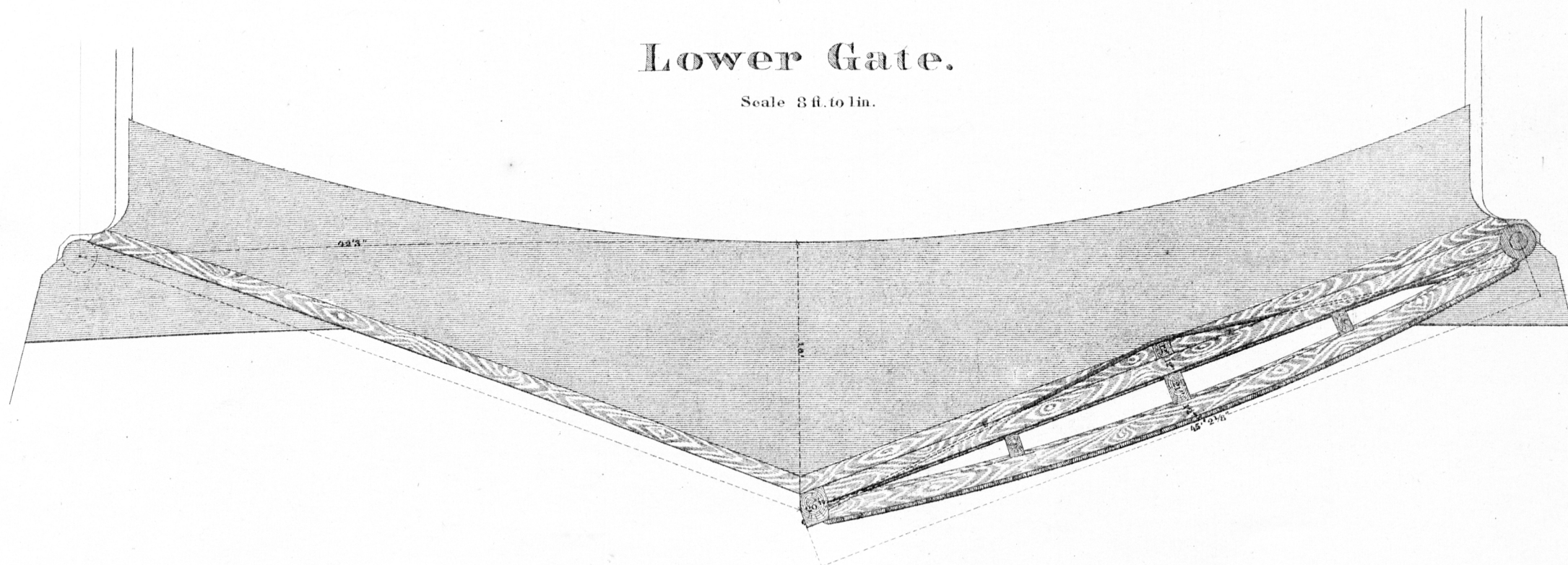
Section at Sta. 429.50.

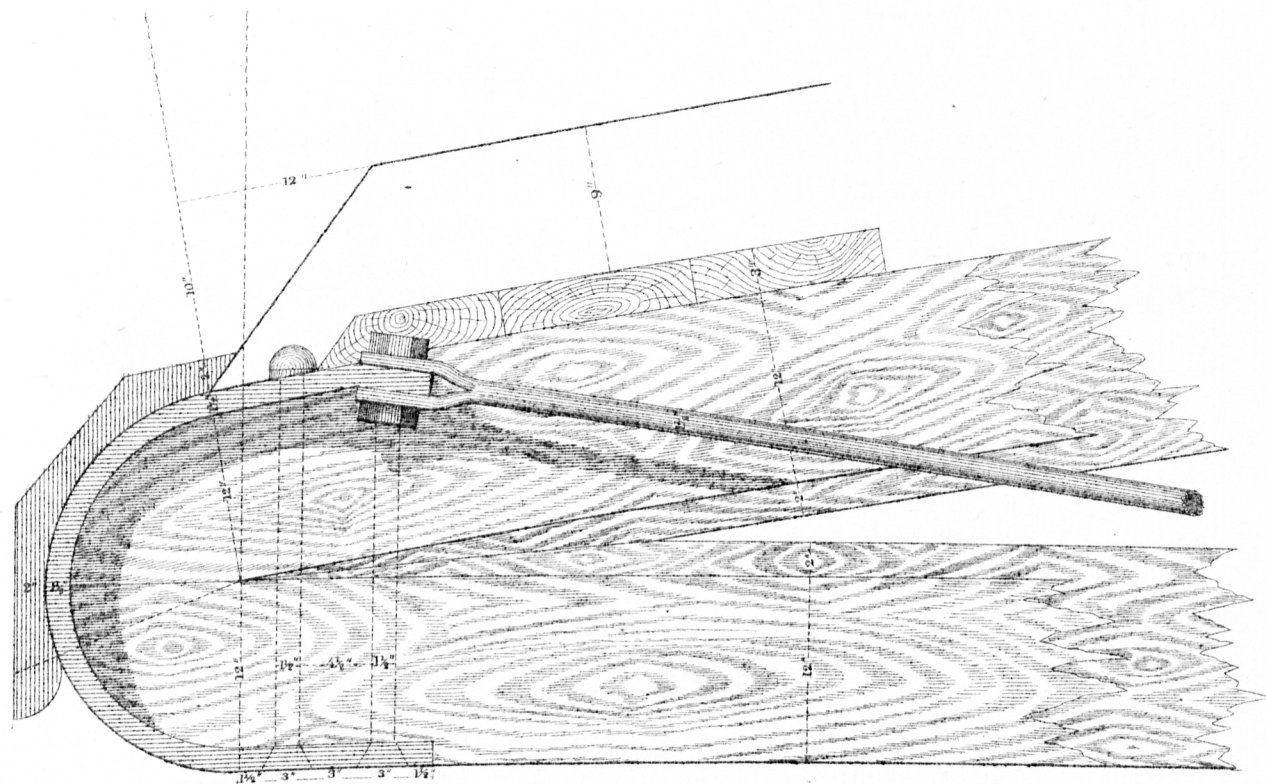
Scale 20 ft. to 1 in.



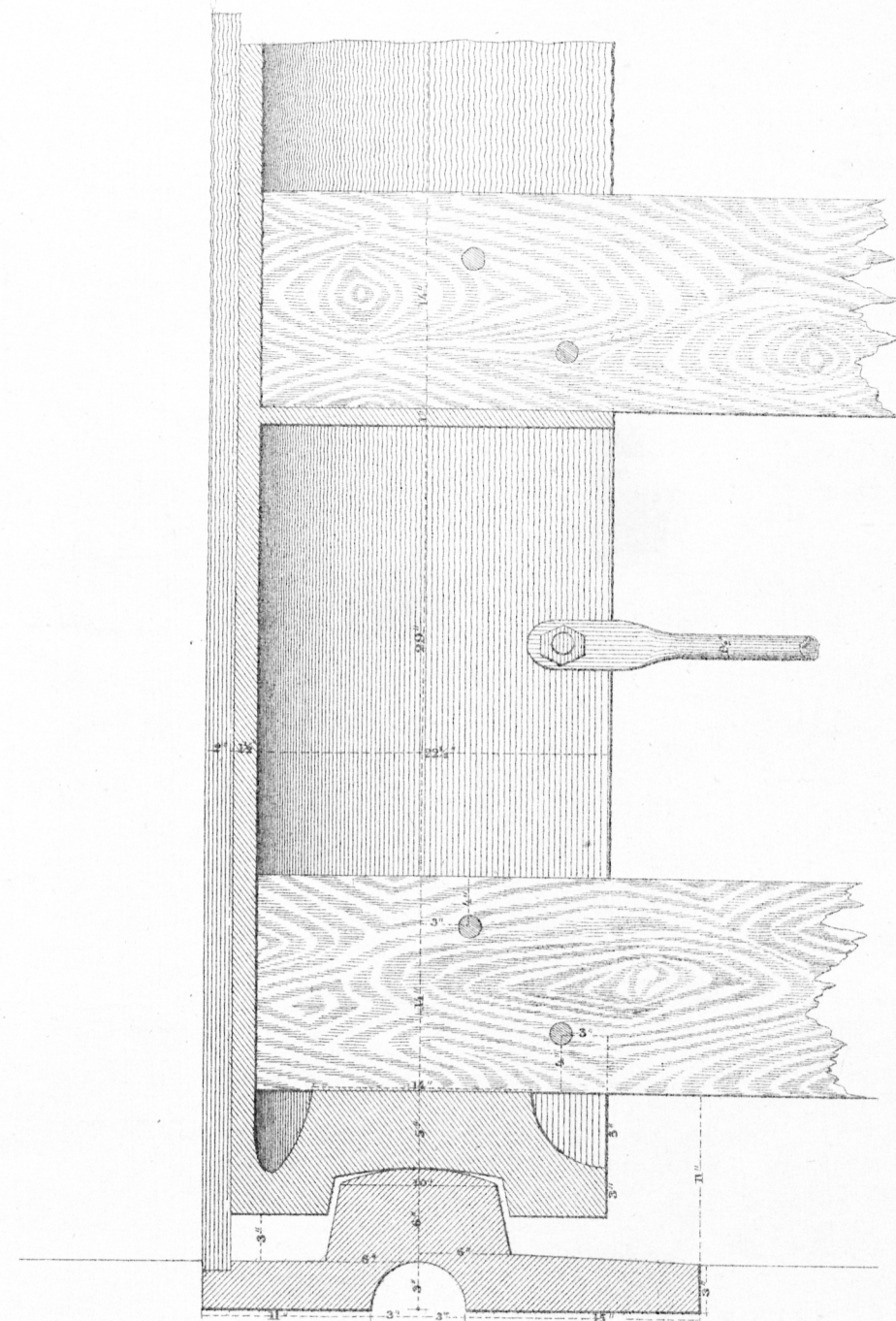
Lower Gate.

Scale 8 ft. to lin.



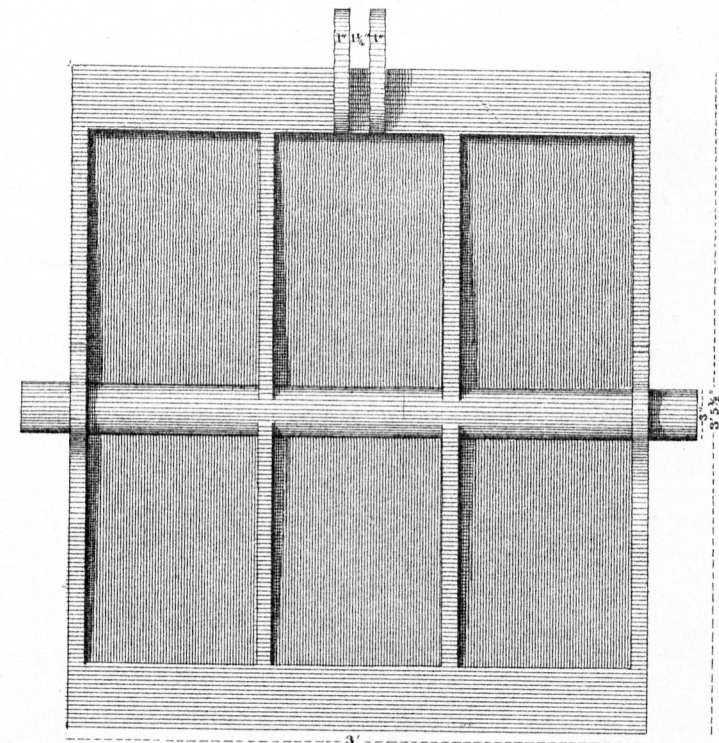
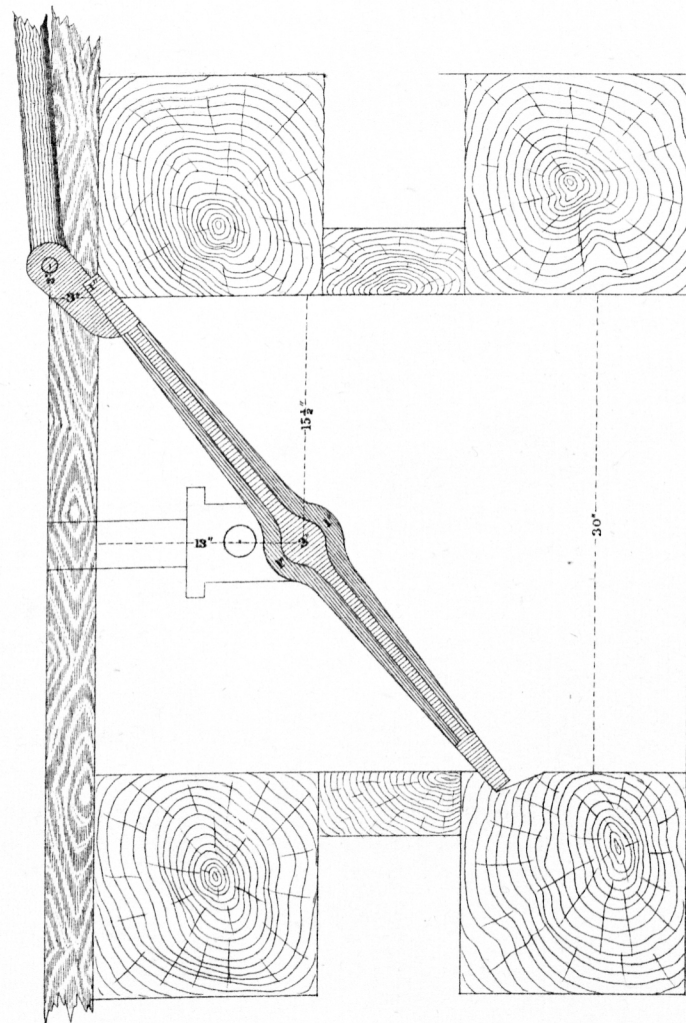


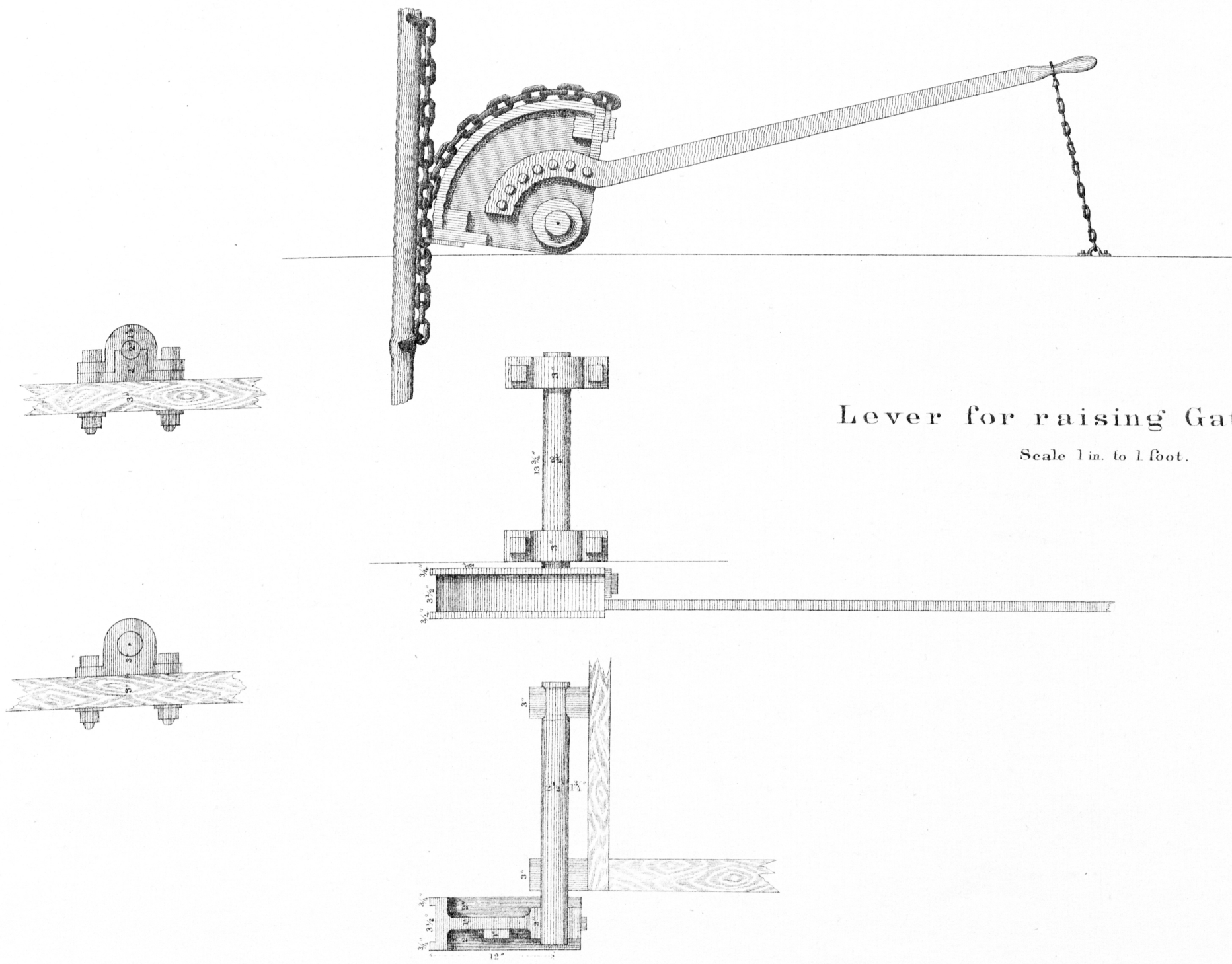
Plan of Heel Post & Hollow Quoin.



Vertical Section.

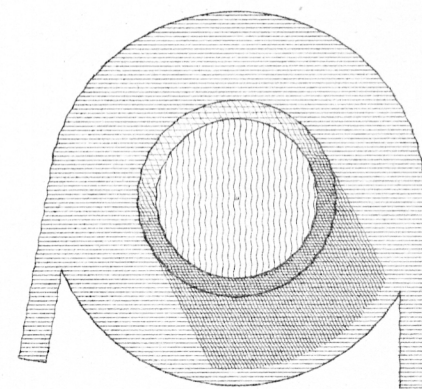
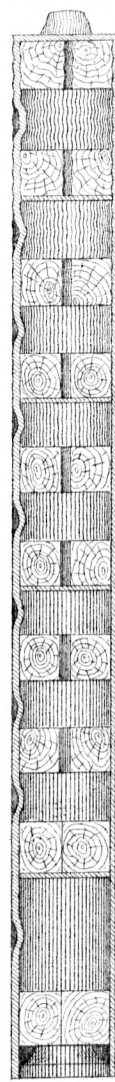
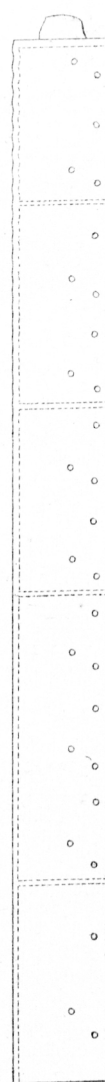
Gate Valve.





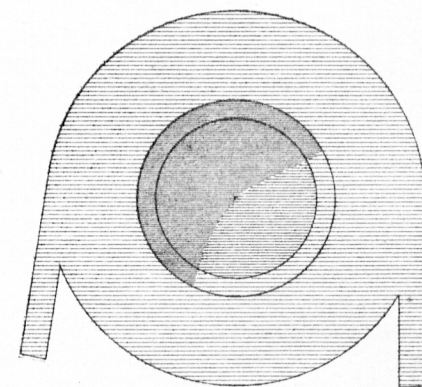
Lever for raising Gate Valve.

Scale 1 in. to 1 foot.

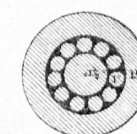
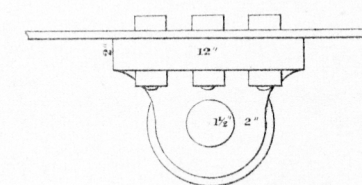
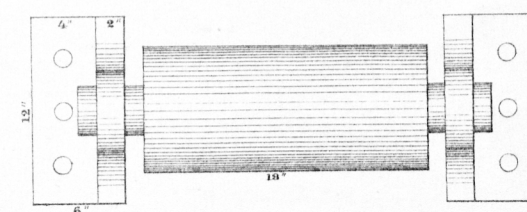
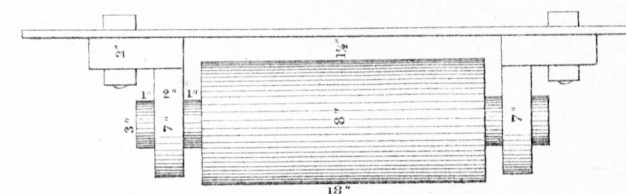
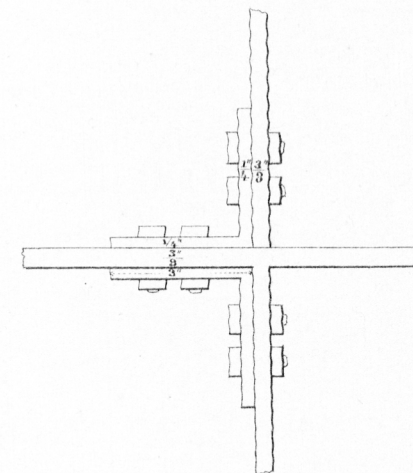
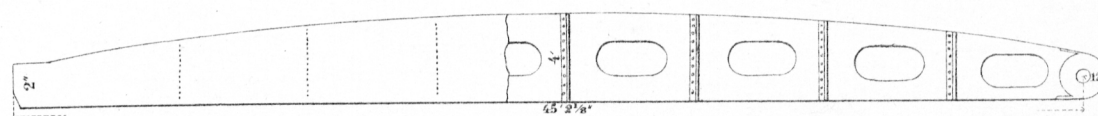
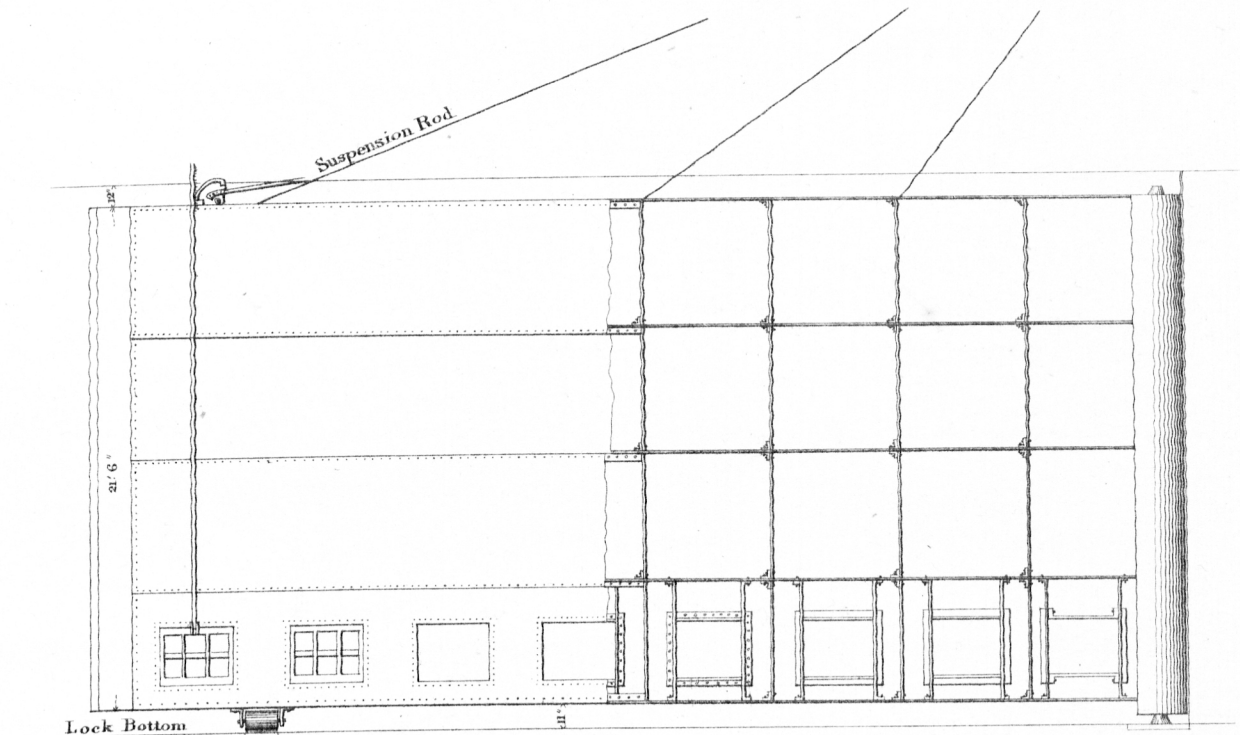
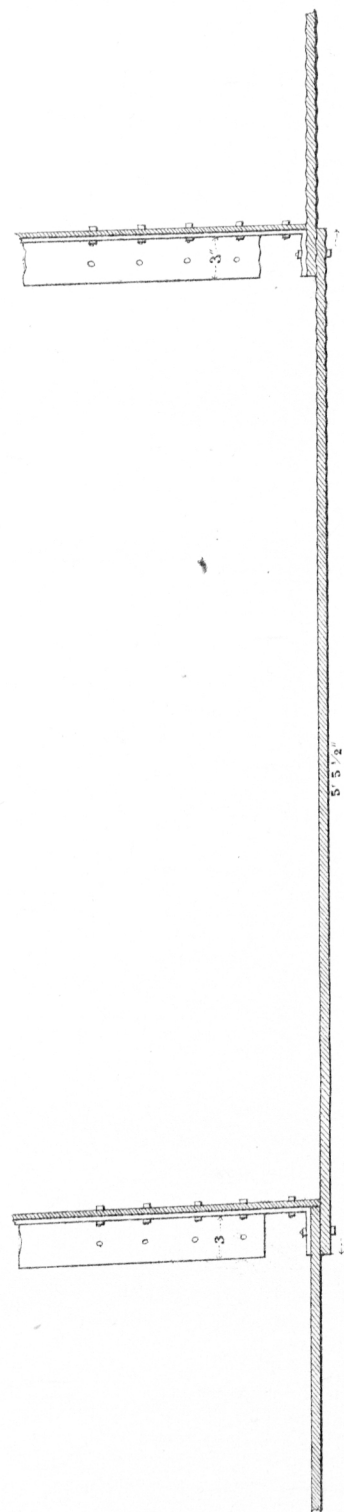


Top.

Heel Post.



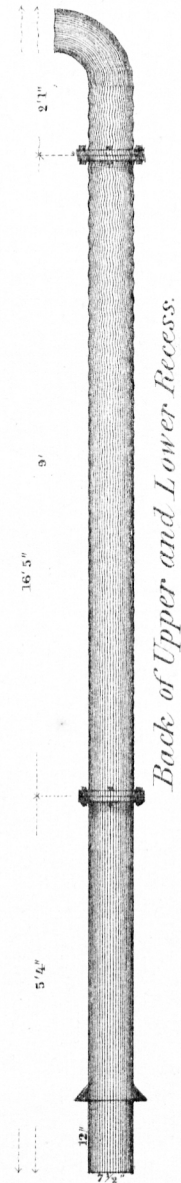
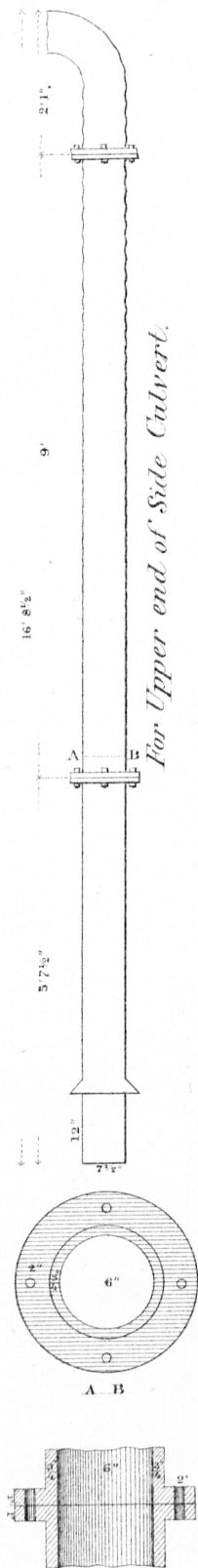
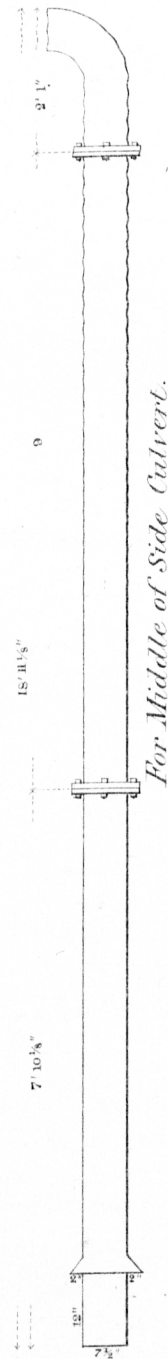
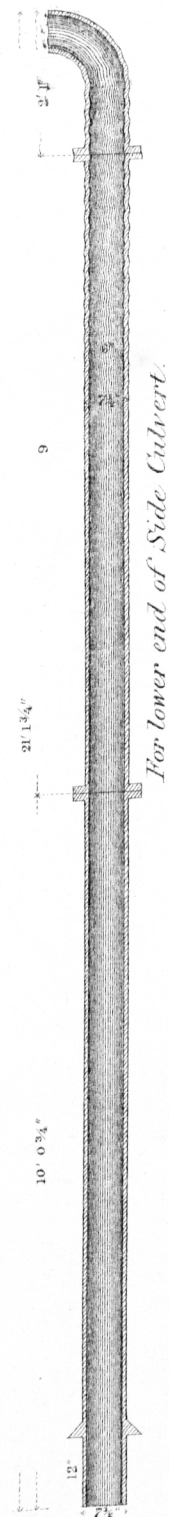
Bottom.



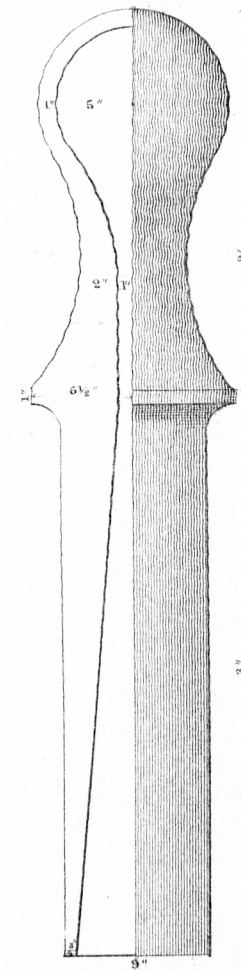
PLAN
of an
IRON GATE
presented by
A. H. BURNHAM CAPT. U.S. ENG'S.
in local charge of
DES MOINES RAPIDS IMPROVEMENT.

Note. It is proposed that these Man holes extend through each Vertical Section, and that extra Valves be provided to hold the Water in any particular space.
Rollers may be dispensed with.

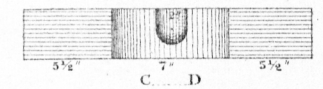
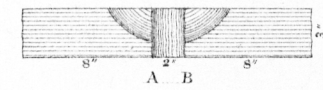
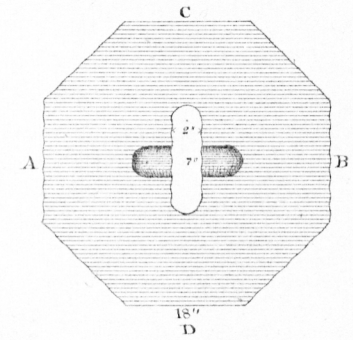
Ventilators.

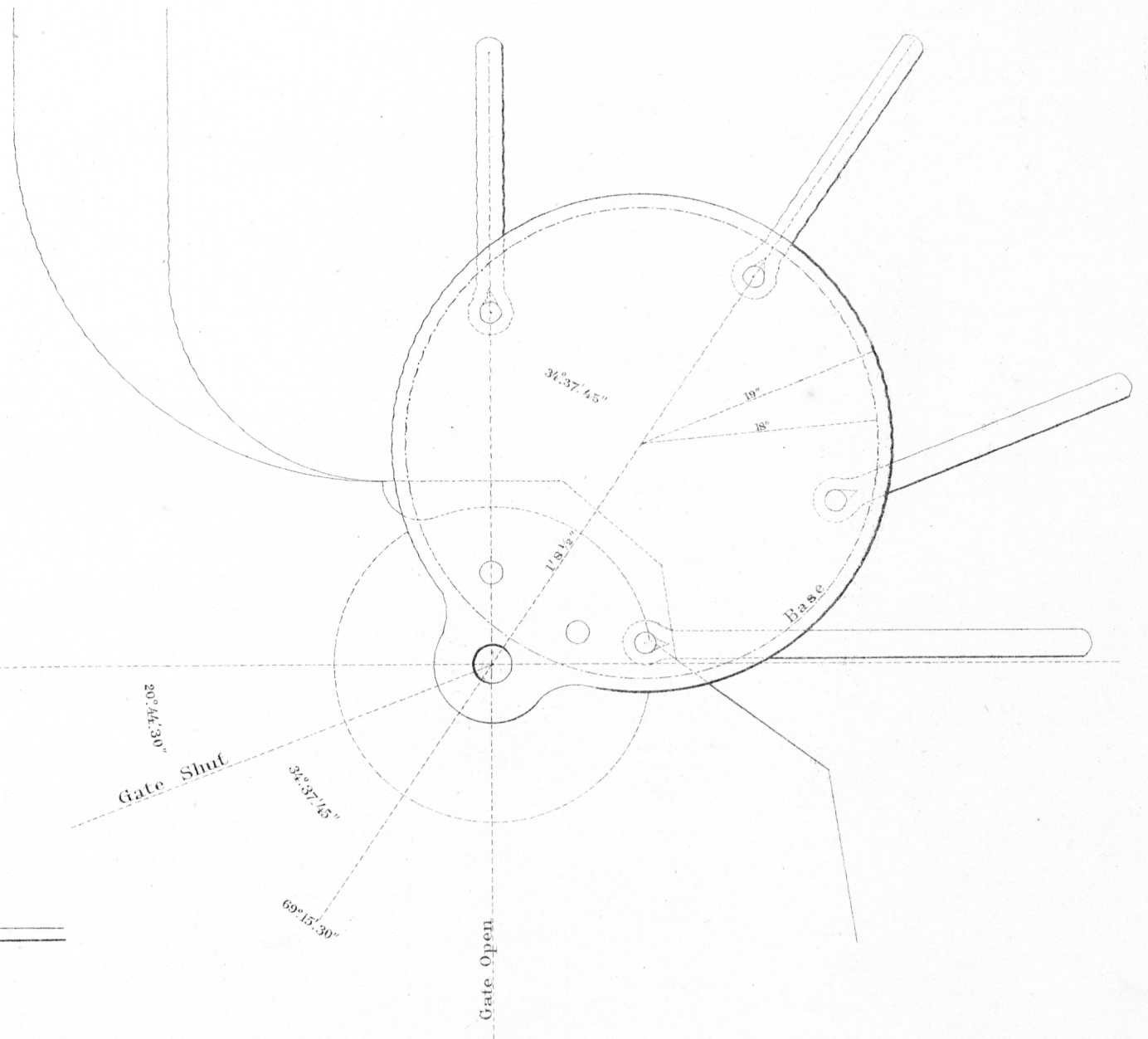
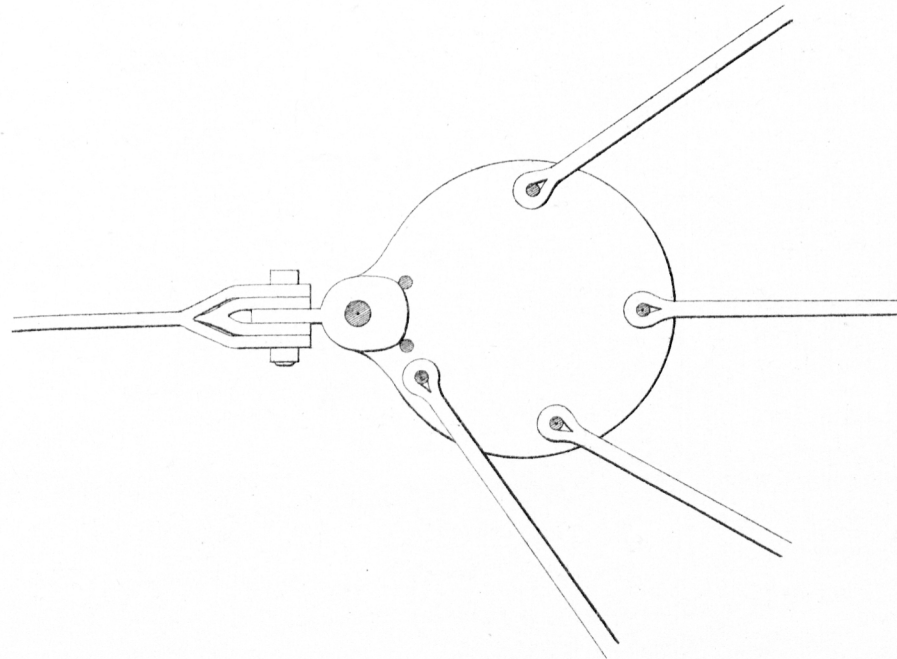
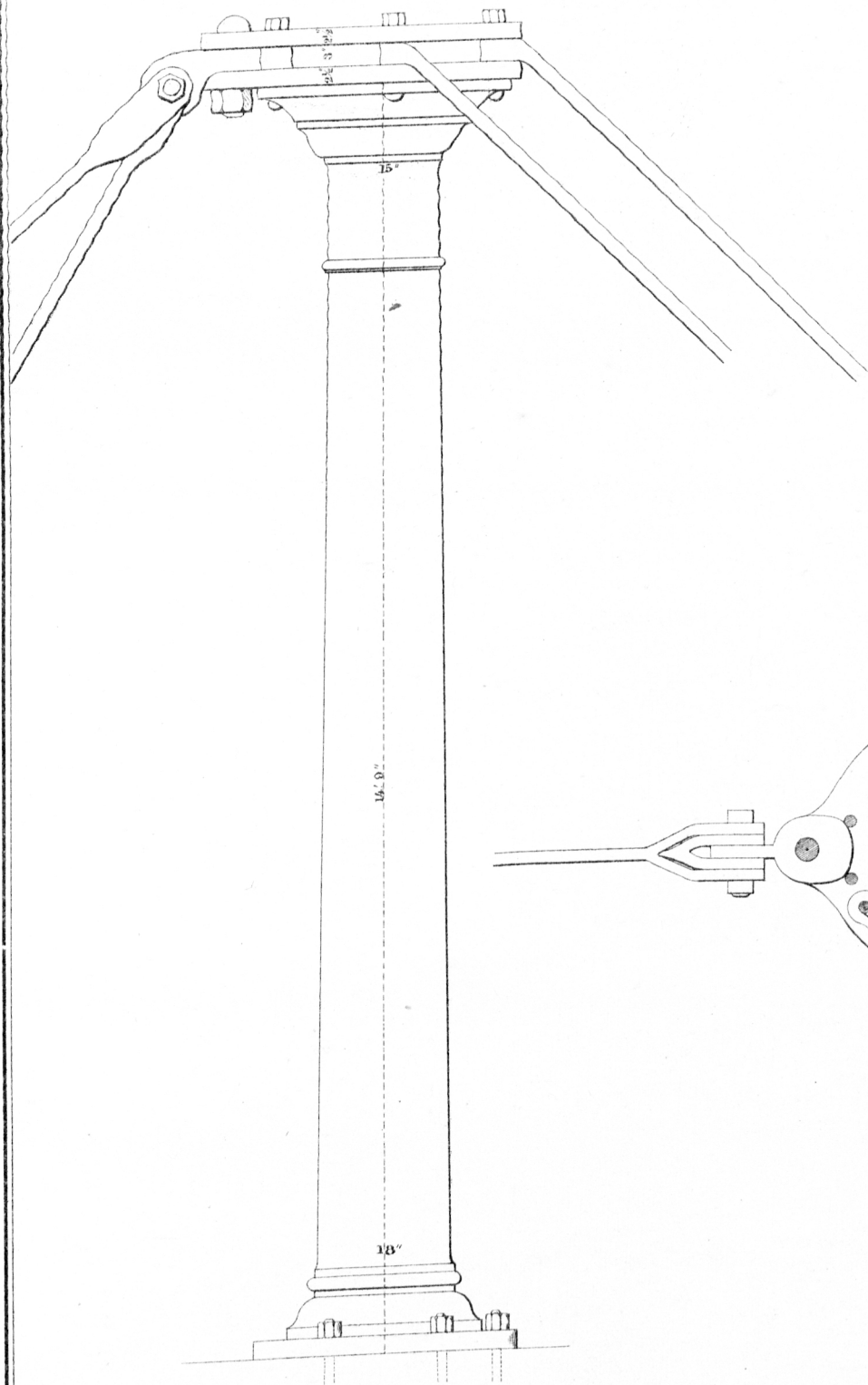


Snubbing Post.



Washer for Suspension Rods.





Suspension Column.